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CANADA
DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

NATIONAL MUSEUM OF CANADA

BULLETIN No. 97
BIOLOGICAL SERIES No. 26

BOTANY OF THE CANADIAN EASTERN ARCTIC

PART II

THALLOPHYTA AND BRYOPHYTA

Compiled and Edited by

Nicholas Polunin

Price, $1 1947

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FOREWORD

This work was completed during the winter and spring of 1938-39 and delivered in Ottawa before the outbreak of war in Europe. With Canada's prompt entry and active part throughout, printing had to be delayed until after the cessation of hostilities. In the meantime a few cryptogamic collections have been brought back from the Canadian Eastern Arctic, a few others made previously have turned up unexpectedly, and Prof. Steere has published "Bryophyta of Arctic America. II. Species collected by J. Dewey Soper, principally in southern Baffin Island" (American Midland Naturalist, vol. XXI, pp. 355-67 (1939)), "Bryophyta of Canadian Arctic" (pp. 1-31, undated and unlocalized), and (with Dr. F. E. Wynne) "The Bryophyte Flora of the East Coast of Hudson Bay" (Bryologist, XLVI, pp. 73-87 (1943)), while the late Prof. Lynge has "identified and annoted" (*sic*) "A Contribution to the Lichen Flora of Canadian Arctic" (16 pp., undated and unlocalized). A few additional cryptogamic records or confirmations of old reports are appearing in my series "Perlustrationes Plantarum Arcticarum" (Journal of Botany, from vol. LXXX onwards).

Relatively little being thus added to our pre-war knowledge in the particular fields involved, and Prof. Lynge and Mr. Nicholson having died, while others of us are still out of touch or unavailable for major works of revision, it is considered best to leave the present work unaltered (apart from details regarding authors and a few subsequent publications and additional, dated footnotes)—a fact that should be constantly borne in mind when considering its nomenclatural details and citations and in consulting its records, lists of references, etc. Additions can be made in detail from the published reports cited above and any others that may appear later or be represented in fresh or unrecorded collections, and all such additional data can be gathered together and collated in a supplement to the present volume when they become sufficiently numerous and collectively important to warrant it.

Meanwhile the following species of Thallophyta and Bryophyta should be noted as newly confirmed for the Canadian Eastern Arctic or added to its known flora since this work was completed early in 1939: the lichens *Lecidea vernalis* (L.) Ach. (from Wakeham Bay, N. Quebec), *Lecidea limosa* Ach. (from Winter Island, Melville Peninsula), *Cladonia cariosa* (Ach.) Spreng. (from near Chesterfield Inlet, W. coast of Hudson Bay), *Cladonia degenerans* (Flk.) Spreng. (from Pangnirtung, C. Baffin, and Wakeham Bay, N. Quebec), and *Parmelia fraudans* Nyl. (from Repulse Bay, Melville Peninsula); the mosses *Sphagnum balticum* Russ. (from Pond Inlet, N. Baffin), *Sphagnum subsecundum* Nees (from Chesterfield, W. coast of Hudson Bay), *Andreaea obovata* Thed. (from Wolstenholme, N. Quebec), *Trichostomum cuspidatissimum* Card & Thér. (from Pond Inlet, N. Baffin), *Barbula icmadophila* B.S.G. (*fide* H. N. Dixon and W. R. Sherrin from Scoresby Bay, c. 80° N. on the east coast of Ellesmere), *Pohlia proligera* Lindb. (from Wakeham Bay, N. Quebec), *Bryum bimum* (Brid.) Turn. (from Cape Smith and Sugluk, N. Quebec), *Drepanocladus vernicosus* (Lindb.) Warnst. (from Craig Harbour, Ellesmere Island), *Hypnum fertile* Sendt. (from Pond Inlet, N. Baffin), and *Psilopilum cavifolium* (Wils.) Hagen (from Dundas Harbour, Devon Island); and the liverworts *Fimbriaria ludwigii* (Schwaegr.) Limpr. (from Pond Inlet, N. Baffin, sub. syn. *Asterella ludwigii*), *Gymnocolea inflata* (Huds.) Dum. (from Strathcona Sound, N. Baffin, and Kingua Fiord, C. Baffin), *Marsupella emarginata* (Ehrh.) Dum. (from Wolstenholme, N. Quebec), and *Scapania paludicola* Loeske & K. Müll. (from Pond Inlet, N. Baffin). Somehow we had overlooked four additional marine planktonic diatoms reported from Hudson Bay by Davidson (1931), viz.: *Rhizosolenia shrubsolii* Cleve, *Rhizosolenia stolterfothii* H. Peragallo, *Thalassionema nitschioides* (Grun.) Hustedt (sub syn. *Thalassiothrix nitschioides*), and, tentatively, *Coscinodiscus concinnus* W. Smith. There is also, appearing at the present time in instalments, l'Abbé Ernest Lepage's detailed "Les lichens, les mousses et les hépatiques du Québec" (Le Naturaliste Canadien, from vol. LXX, p. 193), which contains some further reports.

Nicholas Polunin

New College, Oxford, England,
October 12, 1945.

McGill University, Montreal, Canada,
Revised to November 20, 1946.

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Part II

THALLOPHYTA AND BRYOPHYTA

GENERAL INTRODUCTION

By Nicholas Polunin

This volume deals with the non-vascular cryptogams of the Canadian Eastern Arctic, which, for the purpose of the present series, is defined as the region of Canada lying north of the 60th parallel and east of longitude 95 degrees west, with the exception of the Sverdrup Islands, Boothia Peninsula, and certain inland parts of Keewatin. Those parts of Devon, Cornwallis, and Somerset Islands that lie west of the 95th meridian are included in the area, as are most of the accompanying islets. The total area thus constituted is not far from 1,000,000 square miles, of which nearly one-half is occupied by land. It is perhaps less known botanically than any other area of comparable magnitude on the face of the earth.

The accompanying map (Figure 1, page 2) illustrates how, for the purpose of the present series, our area has been subdivided into ten major districts as follows:

1. Ellesmere.
2. Devon, Cornwallis, and Somerset Islands.
3. Northern Baffin.
4. Central Baffin.
5. Southern Baffin.
6. Melville Peninsula.
7. Northernmost Labrador.
8. Northernmost Quebec.
9. Islands in Hudson and Ungava Bays.
10. West coast of Hudson Bay (Keewatin).

As for the individual "stations" from which the specimens forming the basis of these cryptogamic papers were taken, the whereabouts of most of them are to be found from my introduction to Part I of the present series (Polunin 1940). As that work, like the present, includes at the back a large, detailed map of the whole area, and definitions and accounts of the ten major districts complete with the latitude and longitude of almost all the stations falling within the bounds of each, it is considered unnecessary to repeat such data here, especially as the localities of most previous records are also to be found from the original publications, which are continually cited in the body of this work. Unpublished or otherwise unrecognized stations, such as Seidenfaden's "at sea" ones for Marine Phytoplankton, are generally dealt with in the introduction to the paper in which they are mentioned; some others, which it has proved impossible to localize satisfactorily, are given "inverted commas."

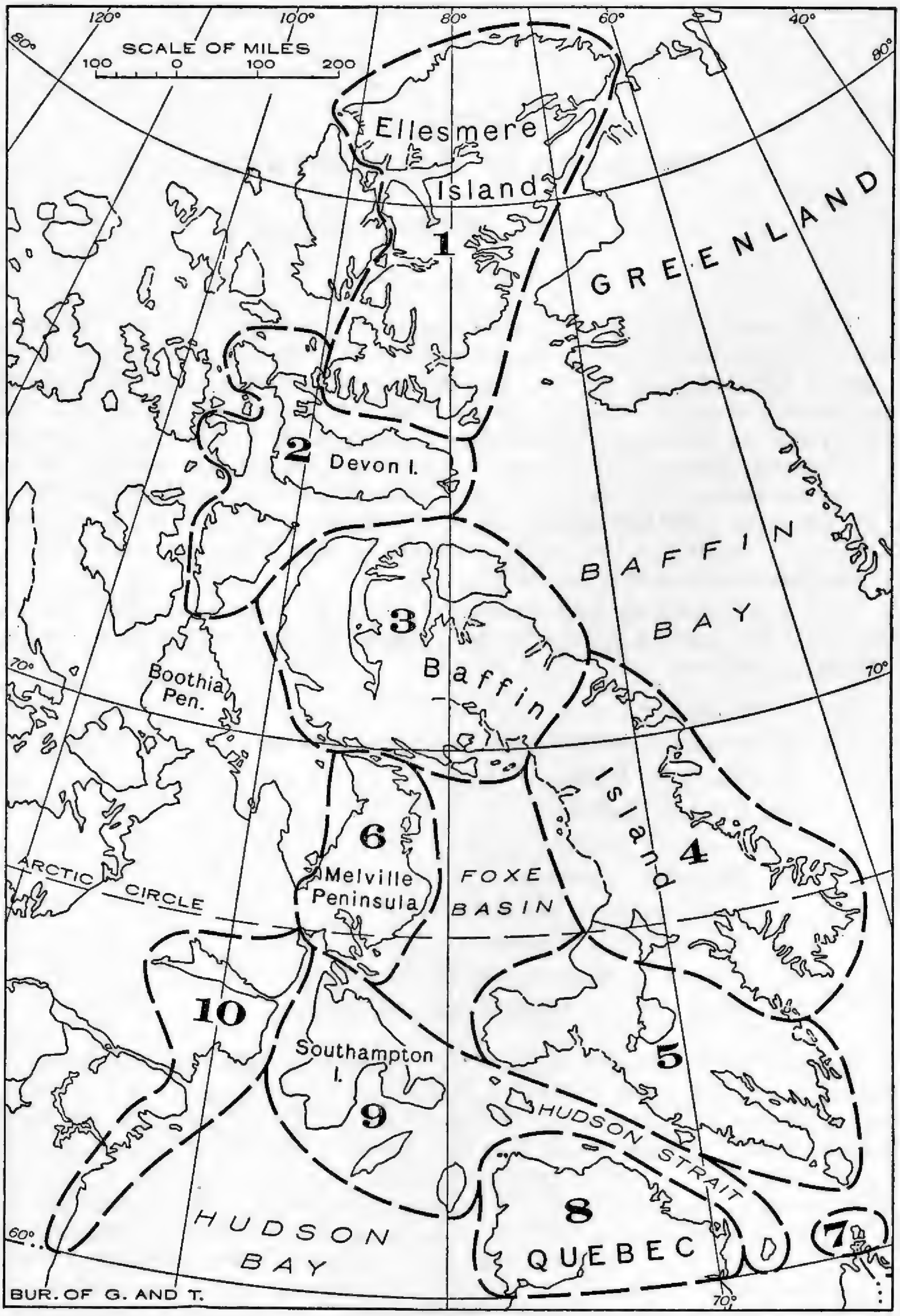

Figure 1. Sketch-map showing subdivisions of the Canadian Eastern Arctic as follows: (1) Ellesmere; (2) Devon, Cornwallis, and Somerset Islands; (3) northern Baffin; (4) central Baffin; (5) southern Baffin; (6) Melville Peninsula; (7) northernmost Labrador; (8) northernmost Quebec; (9) islands in Hudson and Ungava Bays; (10) west coast of Hudson Bay (Keewatin).

An historical sketch of the general botanical exploration of the Canadian Eastern Arctic having been given in my introduction to Part I, it will suffice here to mention merely those expeditions, collectors, or authors who have made the more noteworthy contributions to our knowledge of the cryptogamic flora of the area. This will be done briefly in chronological sequence; but though the list of investigators seems long and especially large strides have been made in recent years, it must be emphasized that the resultant knowledge is still little more than fragmentary. The present publication should, however, besides summarizing our knowledge to date, pave the way for appropriate specialists to investigate these vast regions more adequately in the future.

The first expedition that is known to have brought back cryptogam material from the Canadian Eastern Arctic was that of Capt. John Ross in 1818. The collections were made along the west coast of Greenland and at Possession Bay on Bylot Island, and included a few bryophytes, lichens, etc.; but unfortunately in the botanical appendix to Ross's report (Brown 1819) the Greenland plants are "lumped" with those from our area.

More important was the botanical work of Capt. W. E. Parry in his continued search for a Northwest Passage. Parry's "first" expedition is said not to have collected in our area, but his next expedition brought back considerable cryptogamic material, chiefly from the southwestern parts of the Canadian Eastern Arctic (W. J. Hooker 1825). The collections were made by Capt. Parry and various of his officers, who continued their botanical activities in our area during Parry's "third" expedition, though the cryptogamic results on this last occasion were very meagre (cf. W. J. Hooker 1826). Richardson's "Botanical Appendix" (1823) to Franklin's "Narrative" being inadequately documented, the only other early report that seems needful of consideration here is that of W. J. Hooker (1825b) on the plants collected on or near Southampton Island by Capt. G. F. Lyon in 1824.

The next pertinent records appeared nearly 30 years later; they were Dr. Dickie's "Notes on the Algae" published in the appendix to Dr. Sutherland's account (vol. II, 1852) of a Franklin searching expedition that wintered at Assistance Bay, Cornwallis Island. Other cryptogamic material brought back by this expedition was reported upon by Churchill Babington (1852) and Ehrenberg (1853), while the Algae of a subsequent trip were determined by Dickie (1853).

In 1857 J. D. Hooker published useful lists of bryophytes (determined by W. Mitten) from material collected by Dr. D. Lyall while engaged on another Franklin searching expedition, chiefly around Lancaster Sound. Again in or near this central part of our area were collected (by Dr. Walker) most of the plants reported by J. D. Hooker (1861) from yet another of these searching expeditions which so stimulated exploration of the New World Arctic—this time under M'Clintock in the *Fox*. This last paper includes lists of Algae (by Dickie), bryophytes and lichens (determined by Mitten), and Fungi (by Berkeley); some of the algal material was also seen by O'Meara (1860), who unfortunately in his report does not give precise localities.

Almost yearly from 1856 until 1861 James Taylor visited the eastern shores of Baffin Island as a surgeon on whaling vessels and returned with useful plant collections. His Algae were written up by Dickie (1866), who subsequently reported upon his bryophytes and lichens (Dickie 1869) in an important paper that seems to have been overlooked by most subsequent authors. As a result of another whaling expedition Dickie (1871) reported cryptogams belonging to several different groups from Philpots Island off the east coast of Devon Island.

Owing principally to the ambiguous method of citation of specimens, Hayes's expedition of 1860-61 added practically nothing to our knowledge of the cryptogams of the Canadian Eastern Arctic (cf. Durand, James, and Ashmead 1864), and most of Hall's specimens from his expedition of 1870-73 appear to have been lost through the wreck of the *Polaris*. More successful was Sir George Nares's *Alert* and *Discovery* Expedition of 1875-76, which wintered farther north than any had hitherto done, and during which plant and animal collections were made principally by Hart and Feilden, the bryophytes being identified by Mitten (1878), the Fungi by Berkeley (1878), the lichens by Th.M. Fries (1879), and the Algae by Dickie (1878) and Cleve (1883)—*See also* O'Meara (1878) and Moss (1879).

In the decade following Nares's expedition there took place some others that brought back small cryptogamic collections from our area, viz., from central Baffin (cf. Farlow 1879, Tuckerman 1879, Ambronn 1890, Stein 1890, Winter 1890), and from Ellesmere (Greely 1886 and 1888, whose main collections had to be abandoned; *See also* Vasey 1885, Lehnert and Greely 1886).

In 1884 Canadian Government enterprises began to visit the area, enabling Dr. Robert Bell (cf. 1884) to collect some cryptogams. Subsequently Bell (cf. 1901) made further additions to the known flora, most of which were reported by Macoun and Kindberg (1892) and Macoun (1902), who also mention the work of Low and some other explorers. Meanwhile Comer had collected some mosses (Renauld and Cardot 1896, Cardot and Thériot 1900) and Algae (Setchell and Collins 1908) as well as phanerogams along the west coast of Hudson Bay, and the expeditions of Peary were resulting in a few reports of bryophytes from Ellesmere (Wetherill 1895, Bryhn 1908, Williams 1918).

In 1894 the Swede Nilsson collected in Davis Strait and Cumberland Sound what was probably the first marine phytoplankton material to be gathered in nets in our area. The diatoms in his samples were determined by Cleve (1896), and the dinoflagellates by Aurivillius (1896).

Most of the period 1898-1902 was spent by the Norwegian Second *Fram* Expedition in Ellesmere, from which large collections, made principally by Simmons, were brought back. The Bryophyta were well treated by Bryhn (1906-7), the Fungi by Rostrup (1906), the phytoplankton by Gran (1911), the lichens less satisfactorily by Darbishire (1909). It was chiefly owing to this truly scientific expedition that the most northerly and inhospitable part of our area became the best known to the botanical world.

In the Kew Bulletin (Anon. 1907) are given short but useful lists of Bryophyta and Thallophyta collected by Sir William MacGregor on Chidley Peninsula. About this time also B. Hantzsch of Dresden was making small cryptogamic as well as vascular plant collections around Port Burwell (Hantzsch 1909).

The Canadian Arctic Expedition of 1913-18 worked principally to the west of our area, but in their report two interesting Rhodophyceae were recorded by Collins (1927) as having been collected in Wakeham Bay, N. Quebec, by the *Neptune* Expedition in 1904.

During 1921-24 various members of the Danish *Fifth Thule* Expedition made collections of cryptogams in the central and western parts of our area, the lichens being well treated by Professor Lynge (1935) and the mosses by Hesselbo (1937).

During the second week of August, 1924, detailed planktonic investigations were made by Dr. H. H. Gran in our area when the Norwegian research ship *Michael Sars* made a transect from the coast of Greenland westwards to Exeter Sound, C. Baffin (cf. Gran 1929).

In 1923 and several subsequent summers, during or in connexion with Canadian Government patrols and expeditions, J. D. Soper collected the larger mosses and lichens in many different parts of Baffin Island, and also at the various points of call on Ellesmere and Devon Islands, northernmost Quebec and Labrador, etc. On one occasion Soper collected some Fungi (cf. Dearness 1928).

In 1928 Gunnar Seidenfaden of the Danish *Godthaab* Expedition carried out extensive dredging operations in Davis Strait and elsewhere (cf. Grøntved and Seidenfaden 1938), and also collected some Bryophyta (Harmsen and Seidenfaden 1932) and marine Algae (Lund 1933). During 1927-30, expeditions of the Biological Board of Canada collected Algae in Hudson Bay, etc., but unfortunately in their interesting paper, based on these collections, Bell and MacFarlane (1933, pp. 65-9) omit to give any precise localities.[1] They merely separate Hudson Strait from Hudson Bay. In the former "all forms....are specifically and morphologically marine", whereas in Hudson Bay the surface water appears to be "not of a true marine nature [though] the deep water is more like the ocean" (Bell and MacFarlane 1933, p. 67). Davidson (1931) had meanwhile described the planktonic diatoms collected by one of these expeditions in Hudson Bay both within and to the south of our area.

During the summer of 1930 Dr. G. M. Sutton collected plants, including some cryptogams belonging to various groups, on Southampton Island in Hudson Bay (cf. Jennings 1936), and in 1931, during the Oxford University Hudson Strait Expedition, I made collections of cryptogams of practically all groups on Akpatok Island (Polunin 1934, 1934b, 1935). The records obtained from smaller gatherings made during our expedition of 1931 at Port Burwell and farther south in Labrador are now in the present volume published for the first time, as are almost all other pertinent collections made after 1931; exceptions are some Algae collected in 1933 in the southernmost parts of our area by Dr. G. Gardner (1937), and some others collected in 1934 by Douglas Leechman of the National Museum of Canada, which have also more recently been reported upon (cf. Bell and MacFarlane 1938). Even many of the collections made as long ago as 1923 are now described for the first time in the present volume.

In 1934 and 1936 I took part in Canadian Eastern Arctic Expeditions, making collections of as many cryptogams of all practicable groups as time and the demands of other botanical and ecological work allowed in various parts of Baffin, Ellesmere, Devon, and Southampton Islands, northern Quebec, Labrador, and on the west coast of Hudson Bay. During part of the 1936 expedition Père A. Dutilly collected cryptogams as well as higher plants; assistance was also obtained from Messrs. Leechman, Ney, and Courtright, who brought in gatherings from their "side" trips. The most recently gathered specimens that it has been found possible to report upon in the present work are the mosses collected in 1937 by Prof. David Potter in the southeastern corner of our area. Details concerning what had been accomplished up to that year in most (but not all) of the individual groups will be found in the specialist papers which follow, and which comprise the main body of this volume.

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[1] To my letter requesting further details Professor Bell courteously replied "with deep regret" that he was "unable to be of assistance" as the material was no longer in his possession—October 1946.

The seven specialist contributions have the object of bringing together, for the first time so far as the Canadian Eastern Arctic is concerned, all reliable records[1], whether previously published or not, of entities belonging to the various plant groups. It is hoped that their obvious incompleteness will stimulate specialists to visit this vast area and carry on the work in proper detail.

Although in this volume the treatment of each species follows the general lines laid down in my "Pteridophyta and Spermatophyta", which comprised Part I of the present series, certain modifications and inconsistencies must be recorded. The primary subdivision of each group has been left largely to the author concerned, but individual species have always been numbered consecutively through the group, and (except in the case of the lichens, which have been so frequently documented of late) given full literature citation. The names are followed by any synonyms that may be necessary for guidance in arctic literature, and these in turn are generally followed by a brief discussion of the systematic position, variability, ecology, etc., of the species, together with an account of any intra-specific entities occurring in the area. However, in many cases the notes on variability, ecology, etc., have been omitted, either in the interests of brevity or because they were not available; in the lichen paper (which unfortunately arrived back from the author too late for any but the widest discrepancies to be remedied) they come *after* the citation of specimens from the most recent collections (chiefly my own). These last in the lichen paper are thus separated from the citations of previous literature records, which unlike the recent reports are cited in something approaching the usual detailed manner.

The cryptogamic species being more numerous and less well-known than the higher plants described in Part I, the treatment of the individual species has been simplified in the present volume. Thus, following the details of "general" (i.e. world, as far as known) distribution we give simply "E. Arctic Occurrence", which generally consists merely of the citation of specimens under the usual ten geographical subdivisions (*See* p. 1). It has usually been deemed safest not to attempt to give any indication as to the relative abundance of individual cryptogamic species; this must await the accumulation of far more data than are at present available.

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[1] Where past records have not been included in detail (e.g., in Drs Whelden's and Linder's contributions) they may be found through the introductions and literature citations of thei ndividual papers.

In an attempt to ensure some degree of conformity between the different papers comprising this volume—at least in general treatment and mode of citation—I sent an "outline" of suggestions to each of the contributing authors. The general principles were accepted by all; but, owing to the authors being scattered in several different countries on both sides of the Atlantic, and owing to language difficulties and the different conventions used by different workers in different groups, the first results were chaotic. To be sure, the requirements for full modern taxonomic and phytogeographical treatment vary in different groups; but such of these as are mere conventions I have thought fit to sacrifice in the interests of accuracy and conformity. Accordingly, I have spent several months checking citations and references and have even partly re-written some of the papers—although, of course, without altering the original sense or contributed subject-matter, which it is hoped will be verified in proof by the authors themselves.[1] Elsewhere I have put footnotes with my initials to indicate changes or points of doubt or difficulty where the author concerned could not be contacted directly. Beyond this I take no responsibility for the opinions offered—or, of course, for the new species, etc., described.

The herbaria in which specimens cited in the present volume are stored are indicated as follows:

O	Ottawa—National Herbarium of Canada.
M	McGill University, Montreal.
F	Farlow Herbarium of Harvard University, Cambridge, Mass.
Z	Clark University, Worcester, Mass.
N	New York—Herbarium of the Botanical Gardens.
W	Washington—United States National Herbarium.
P	Philadelphia—Herbarium of the Academy of Natural Sciences.
U	Catholic University of America.
A	University of Michigan, Ann Arbor, Mich.
X	Herbaria of the Department of Botany, Oxford University.
B	British Museum of Natural History, London.

The sign * denotes that the specimen has not been seen by the author concerned, but is reliably reported as being visible in the institution indicated. It may be noted that in some cases (particularly the Musci and smaller Algae), several or even many species are apt to remain with the same collection number—usually owing to having been gathered in a single sample or at least the same habitat.

The method of citation is simple but flexible, the type and amount of "field" data varying in different groups and being selected chiefly according to what is likely to be most significant. Thus, with many Algae and Fungi the season is important, and so the date of collection is given in full; with lichens this is not the case. Except in the report on the lichens, again, wherever localities have to be cited within minor districts (i.e., districts that form only a part of one of the ten major subdivisions) the name of the minor district alone is *italicized*. Localities within it are separated by semi-colons; a full stop indicates passage to another minor district. Minor districts are mentioned by name only when this seems desirable for clarity. Their boundaries are not kept rigidly; sometimes for convenience in citation they may be altered or fused. The sequence of localities is given in general from north to south and east to west. To obviate constant reference to a key, the names of localities, collectors, etc., are repeated in full. This is also done with most literature citations; but occasionally, e.g. in the cases of Musci reported by Bryhn (1906-7) from a long list of localities or even all those visited, more economical "block" references are given.

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[1] Especially in view of the retyping in Ottawa of the entire manuscript before delivery to the printer, it is to be regretted that unexpected circumstances have prevented me from checking to their original sources, in proof as had been intended, more than a proportion of the thousands of references, quotations, etc., of the collaborating authors, or even by any means all of those for which I am alone responsible. The Department of Mines and Resources was able to allow authors a considerable time in which to correct their proofs but it had been my hope to relieve them of the mere mechanical checking for which, however, they must now in the usual manner be considered individually responsible—October 1946.

Not only have the different collaborators rather different ideas as to what constitutes a species, a variety, and so on, but they appear to have different views concerning the "International Rules" (and recommendations). Thus, with regard to Article 48 (Briquet 1935) I was reduced (except in Mr. Ross's paper, which may be taken as a model) to substituting "in" for both "ex" and "apud" between the names of authors, and omitting it, with the substitution of a comma, before the name of a periodical. I have also (except in Mr. Ross's paper) conformed to practice rather than the rules in citing, instead of the publishing author or authors, the author or authors to whom any particular variety or combination was attributed when first published. Nor have I considered it my right, in opposition to the practice of the specialist collaborators, to introduce the use of square brackets around the names of authors whose publication appeared before the start of nomenclature in the particular group involved, although I have ventured in such cases to place the whole citation—when it is given—in square brackets as a reminder that such attribution (as well as other authors' names given alone, e.g. when a transfer has been made) are illegal.[1]

Latterly, many of us have become convinced that there is an almost overwhelmingly strong case against the *recommendation* in the "International Rules" that specific and intra-specific epithets which are old generic names or are derived from personal names or vernaculars should be written with initial capitals[2]; in agreement with the Departmental Editor I have, accordingly, decapitalized all such epithets in the present work except where they remain in quotes.

Also needful of explanation is the varying arrangement of the species and genera in each group, sometimes alphabetically and sometimes according to some recent monograph; such questions were left to the specialists concerned, who when necessary give explanations in their introductions; their chosen sequence and numbering are maintained in my summary.

Much effort has been given to making the aims, names, and methods employed as simple and uniform as seems humanly possible when one is dealing with such a mass of material belonging to such diverse groups, treated by such different people in such far-flung countries. But still there remain inconsistencies and, inevitably, some sources of error. Especially, in addition to the above connexions, may lack of conformity be noted in the contraction of the names of authors, titles, and periodicals, as well as in such points as the substitution of "ae" for "ä" or "oe" for "ö" or

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[1] In the case of certain Fungi, however, Dr. Linder has upheld the suggestions regarding square brackets and so these are used around "earlier" authors' names in the text —October 1946.

[2] Cf. Journal of Ecology, XXXI, p. 93 (1943), and XXXIII, pp. 308 *et seq.* (1946)—Sept. 1946.

"ø", etc. This is sometimes due to differences in the citations by others, including the author himself who is named. In one or two instances the same paper may even be cited under two dates in different contributions, because it had been realized only toward the end of my editing activities that the real date of publication was other than the one printed on the title page.

The great debt of gratitude which I owe to almost innumerable friends, colleagues, and correspondents for the very existence of this series on the Botany of the Canadian Eastern Arctic has already been acknowledged in the introduction to Part I. I here thank them all again, and mention especially the individuals of a smaller group who have been more directly concerned with the production of the present volume. These are the six specialist collaborators who contributed the original papers that compose the bulk of this volume, and Professor Alexander W. Evans of Yale University who was prevented at the last moment from doing so, but supplied me with a very helpful list of identifications. These specialists are scholars of distinction; I was most fortunate to obtain their support; all interested have reason to thank them for their magnificent efforts, whose completion often necessitated the laying aside of other work for months on end. I myself thank them again, most warmly; I only hope that I can be forgiven for my almost endless correspondence and requirements, and for such recasting and alteration as I have done in the interests of conformity. Moreover, on the advice of colleagues but my own responsibility, I have ventured to add footnotes with my initials where, for example, it seemed desirable to clarify or emphasize points of interest in the paper of an author with whom I was unable to communicate such an intention before the whole series had to be delivered in Ottawa. It has been our feeling that, even if this procedure may introduce a critical note (usually more apparent than real), the series as a whole will benefit, while in any case there were naturally as the long work developed some changes in editorial policy that had to be covered.

Finally, I wish to thank the Keeper, Dr. John Ramsbottom, O.B.E., P.L.S., and the staff of the Department of Botany of the British Museum, for their generous gifts of time and knowledge in helping me to prepare this volume for the press. In this connexion I feel particularly indebted to my friends Messrs. Geoffrey Tandy, I. Mackenzie Lamb, R. Ross, W. R. Sherrin, and Miss F. L. Stephens.

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1. ALGAE[1]

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INTRODUCTION

The algal flora of the American Arctic is far less well known than that of the Old World Arctic. The latter has been carefully studied by many workers, so that our acquaintance with both the marine and freshwater forms may be considered reasonably detailed. This knowledge covers not only the mainland regions of Norway, Finland, and Russia, but also the arctic islands Spitsbergen and Novaya Zemlya. (The Algae from the wide expanse of the Siberian coast have, however, been collected only from isolated stations.) Greenland and Iceland have also been exhaustively investigated, both the marine and the freshwater Algae being now well known, through the studies of many Danish and other workers—especially Boldt (1893), Rosenvinge (1893, 1898, 1898b), Börgesen (1894), Jonsson (1902, 1903, 1903b, 1904), Larsen (1904), and Boye Petersen (1928). The work of Kjellman (1883) has made familiar the broader aspects of the algal flora of the Arctic Sea.

Even less known than the algal flora of the coastal waters of northern North America and the many islands associated therewith, is the flora of the fresh waters of this vast region. Taylor (1934) has recently published the results of an extensive study of the freshwater Algae of Newfoundland, and the freshwater Algae of northwestern Canada have been reported upon in some detail by Lowe (1923); the region covered by the recent Canadian Eastern Arctic expeditions is, however, practically unknown in this respect. Nor does this seem so surprising, when one considers the relative inaccessibility of the region and its paucity in features that are attractive to normal human beings. Nevertheless, this ("our") Eastern Arctic area has received some attention from algologists, who usually obtained second-hand the materials that they studied. In many cases it is difficult or impossible to determine from exactly what part of this enormous area the Algae were collected. Accordingly, some early reports seem best ignored. Nor are the lists of Algae very long.[1]

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[1] Excepting Marine Phytoplankton and Freshwater Diatomeae, which are treated separately by Messrs. G. Seidenfaden (pp. 138-177) and R. Ross (pp. 178-233), respectively. Dr. Whelden's paper is a contribution from the Biological Laboratories and the Farlow Herbarium of Harvard University, where the work was done. (N.P.)

The first publication that concerns us directly is the discussion by Ehrenberg (1851) of the occurrence of Red Snow *(Sphaerella nivalis)* in Baffin Bay.[2]

Dickie (1852, 1853, 1861 in Hooker, 1867, 1880[3]) gives brief lists of Algae, including 63 marine species and 8 freshwater ones.[4]

Farlow (1879, 1886) also gives short lists of marine Algae brought from this region and from others lying to the south, and Jennings (1936) gives a brief note on Algae from Southampton Island in Hudson Bay.

More detailed and important are the observations of Polunin (1934, 1935) on the Algae of Akpatok Island in Ungava Bay, and quite recently (1938) Bell and MacFarlane have published a paper listing some 30 marine Algae from other parts of our area. The "Algues de la côte du Labrador et de la côte Ouest de la Baie d'Hudson" enumerated by Gardner (1937, pp. 47-50) are unfortunately without precise localities, although some of them were collected in our area.

The Algae included in the following report are known from an intensive study of the contents of 190 vials of material, mostly from freshwater localities, and of some 40 sheets of dried marine Algae. The gatherings were made from a wide variety of habitats by Nicholas Polunin during the Canadian Eastern Arctic Expedition of 1936.[5] Some of the vials contained a very scanty amount of algal material, often only a single species. Others were especially rich, dozens of species being found in a single tube.[6] The preservative was a mixture of glycerine, alcohol, and water, which usually left the plastids in a condition fairly easy to study. The contents of each vial were examined drop by drop until it was apparent that further examination would yield few if any additions. At the beginning of the examinations all vials were tested to make sure that none was drying up, more preservative being added where necessary. The vials were then numbered consecutively, without regard to the locality or date of collection. These numbers appear in parentheses in the following lists at the end of the notes on habitat. With few exceptions the remarks on habitat are those written on the labels on the vials.[7] A notable exception is the one from Chesterfield, west coast of Hudson

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[1] It is to be regretted that Dr. Whelden was unable to cite individually the many previous records of Algae from our area, with the result that his contribution is less complete than most others in the present series. However, he is to be congratulated on finding, in my admittedly limited collection made in 1936, more than four times as many species of Algae as have been recorded from our area by any one previous authority. (N.P.)

[2] Actually, this "red snow" reported by Ehrenberg had been observed on the Greenland side of Baffin Bay, but Dr. Whelden omitted to mention some still earlier publications in which are reported a few Algae from our area—e.g., W. J. Hooker's "Botanical Appendix" to Parry's Journal of a Second Voyage (published in 1825) in which are listed eight species from Hudson Strait (plus "*Ulva compressa*" of uncertain origin) and one from Igloolik. It should also be mentioned that *Sphaerella nivalis* is now commonly referred to the genus *Chlamydomonas*. (N.P.)

[3] Dickie also reported nine species of Algae from Philpots Island off the east coast of Devon Island in Jour. Linn. Soc., Bot., XI, p. 34 (1871). (N.P.)

[4] A few species of Algae were also reported from Smith Sound, without proper localities, by Saml. Ashmead in 1864 (Proc. Acad. Nat. Sci., Phila., p. 96 (1863).) (N.P.)

[5] Except for some of the sheets of dried Algae which I collected on the corresponding expedition of 1934, and which, like the other sheets of dried material cited in this work, are marked with my own collection numbers. In Dr. Whelden's report "the expedition" normally refers to that of 1936. *See also* Footnote (1) on previous page.

[6] Often, for the sake of economy, the result of several separate gatherings stored together—hence some apparent discrepancies in habitat citations under the same number in the body of this and some of the following papers. (N.P.)

[7] To avoid confusion and constant reference to other parts of the report, even the most frequently recurring items of data will be stated in detail hereafter.

Bay, which is changed to read "on the sheath of a colonial animal." This collection (69) was composed almost entirely of a rather extensive gelatinous mass containing many animal bodies, which had been rendered shapeless and indeterminable by the action of the preservative. The sheath contained an abundance of algal specimens, so numerous as to conceal completely the objects beneath them.

Other collections rich in number of species were (116) from Lake Harbour, which contained fifty-five different species, (140) from a tundra pool, also at Lake Harbour, with thirty-five species, (104) from the side of a lake at Wakeham Bay, with forty-seven species, and (107) from a slimy *Carex* taken at the same place and containing thirty-eight species. Many other collections contained from twenty to thirty species, varieties, and forms. After examination, the material was returned to the vial from which it had been taken.

It was found necessary, due to pressure of other work and the requirement of finishing this examination within a certain time, to neglect the diatoms. Although the latter formed only a minor part of the present collection, it is regrettable that they could not be included. However, it seemed better to leave them out entirely than to do them in a sketchy way.[1]

It is to be realized that the present study is only a sampling of the algal flora from a region so extensive and so abundantly studded with a variety of habitats favourable to the maintenance of a rich algal community that many collections and years of investigation will be necessary before anything approaching complete knowledge will be available.

The material of the present collection is deposited in the Farlow Herbarium of Harvard University, to whom it was presented by Dr. Polunin.[2] In the following account of the specimens that, with a few exceptions, Dr. Polunin collected alone, the Cyanophyceae are arranged chiefly according to L. Geitler's volume in Rabenhorst's Kryptogamen-Flora (1930-2). For the Chlorophyceae I followed G. M. Smith's "Freshwater Algae of the United States" (1933) and L. Newton's "Handbook of the British Seaweeds" (1931), although many of the determinations were, of course, based on other books or monographs. The Phaeophyceae and Rhodophyceae are also arranged according to Newton's work.

The total collection has yielded, exclusive of diatoms[1] and some marine planktonic organisms, no less than 383 species of Algae. There are 108 Cyanophyceae, 1 Heterokontae, 3 Chrysophyceae, 247 Chlorophyceae (of which 184 are Desmidiaceae), 3 Dinophyceae, 12 Phaeophyceae, and 9 Rhodophyceae. These figures do not include the varieties and subsidiary forms that are "taken up" as occurring in the area and will also be found listed in the summary.

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[1] Subsequently Mr. R. Ross of the British Museum was good enough to step into the breach, so that we now have a detailed, specialist's account of the Freshwater Diatomeae (*See* pp. 178-233). The marine planktonic members of the group are dealt with by Herr G. Seidenfaden. (N.P.)

[2] I have, however, retained some duplicates from among the larger forms. These are incorporated in the appropriate unit of the Herbaria of which I have charge at Oxford. (N.P.)

The following will serve as index to the classes and families with which we are concerned in the present paper:

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CYANOPHYCEAE

CHROOCOCCACEAE

1. **Chroococcus limneticus** Lemmerm., Bot. Centralbl., LXXVI, p. 153 (1898).

The cells varied from 6-8μ in diameter and formed colonies of 8-16 cells. In a few cases the cells were in pairs and hemispherical. The cytoplasm was homogeneous.

General Distribution. Plankton of lakes in Europe and North America. Lowe (1923) has reported it from Collinson Point and Bernard Harbour in northwestern Canada.

E. Arctic Occurrence.[1]

5. S. Baffin: *Lake Harbour,*[2] Polunin Aug. 27, 1936, several small colonies in a collection from freshwater pool (29).

2. **Chroococcus minutus** (Kütz.) Nägeli, Gatt. einzell. Alg., p. 46 (1849).

The small colonies of this species were composed mostly of four cells, each cell being 4-5μ in diameter.

General Distribution. Stagnant water, pools, and damp soil, etc., in Europe and the United States.[3]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in eddy in peaty brook (41).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in scrapings from leaves of *Carex aquatilis* var. *stans* growing in freshwater pool (126).

3. **Chroococcus turgidus** (Kütz.) Nägeli, Gatt. einzell. Alg., p. 46 (1849).

One of the Algae most frequently found in the present collection.

General Distribution. Cosmopolitan, having been recorded from nearly all countries where the algal flora has been studied at all thoroughly. These countries include Alaska, western Canada, Greenland, Iceland, Lapland, Spitsbergen, and Novaya Zemlya.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from the edge of a freshwater pool that was drying up (50).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, from the surface of wet mud (159).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from the edge of a lake (16), in seepage from a quartzite cliff (133); *Cape Dorset,* Polunin Aug 25, 1936, on rotten *Carex* leaves (37).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, from a tundra pool (21).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late snow (93), in slimy scum on old *Carex aquatilis* leaves (107); *Cape Smith,* Polunin Aug. 3, 1936, in seepage from stagnant pools (117).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from the bottom of a stream (70), from a flocculent, floating mass in freshwater stream (73).

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[1] I.e., as evidenced in my present (1936) collection. Cf. footnote (1) on p. 14. (N.P.)

[2] Owing to the changed method of citation necessitated by Dr. Whelden's inclusion of notes on the habitat of individual gatherings, the localities will be given in *italics* in this paper. The dates have been checked: if they appear confused it is because the same place was often visited more than once during the summer. (N.P.)

[3] Apparently new to Canada. (N.P.)

4. **Gloeocapsa compacta** Kütz., Tab. phyc., Pl. XXXVI, fig. 4 (1845-9).
G. violacea (Corda) Rabenhorst var. *compacta* (Kütz.) P. Richt.

The cells of this Alga are about 2μ in diameter and are surrounded by a sheath, the colour of which varies from a light grey to a deep, though transparent, chocolate-brown. Many cells occurred singly and were surrounded by a sheath that rarely showed any stratification; the total diameter with the sheath was 6-9μ. Other cells occurred in groups of 2-4. In these the sheaths were distinctly stratified. (*See* Plate 1, figure 2.)

General Distribution. Europe; on wet rocks and the bark of trees.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnating fresh water (42).

5. **Gloeocapsa crepidinum** Thuret, Notes algologiques I, Pl. I, figs. 1-3 (1873).

Cells without the sheath were 4-8μ in diameter; with the sheath, 9-12μ. The sheaths were yellowish, becoming colourless towards the surface, and showed no stratification.

General Distribution. Rocks and woodwork of the coast of Europe and the United States.[2]

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from rocks near high tide-mark (169).

6. **Gloeocapsa decorticans** (A. Br.) "P. Richt.,"[3] in Wille, Nyt. Mag. Naturvid., LXII, p. 186 (1925).
Chroococcus decorticans A. Br.

The cells of this Alga were from 8-10μ in diameter; with the sheaths they were 20-30μ. They occurred in groups of 2-4. The sheaths were colourless and showed very indistinct stratification.

General Distribution. Damp rocks and standing water, Europe and North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

7. **Gloeocapsa fuscolutea** (Nägeli) Kütz., Spec. Alg., p. 224 (1849).

The cells of this species were from 1·5-2μ in diameter; with their sheaths they were 4-6μ. The sheaths were rusty yellow in colour and indistinctly stratified.

General Distribution. Wet rocks, Europe and North America.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on a raised beach (57).

8. **Gloeocapsa kuetzingiana** Nägeli, Gatt. einzell. Alg., p. 51 (1849).

Cells without sheaths were 3-3·5μ in diameter. The sheaths were deep yellow in colour, and homogeneous.

General Distribution. Widespread.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 30, 1936, in seepage from late-melting snow (105).

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[1] Apparently new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

[3] The "quotes" are mine. (N.P.)

9. **Gloeocapsa montana** Kütz., Phyc. gen., p. 173 (1843).

Cells 2·5-3·5μ in diameter. The sheaths were colourless and distinctly stratified.

General Distribution. Widespread in Europe and the United States.[1]

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept 7, 1936, in a small, frozen freshwater pool (64).

10. **Gloeocapsa punctata** Nägeli, Gatt. einzell. Alg., p. 51, Pl. I F, fig. 6 (1849).

Cells, without sheaths, were 2-3μ in diameter; with sheaths the diameter was 5-7μ. The sheaths were colourless and without stratification. This species was of infrequent occurrence.

General Distribution. On wet rocks. Widespread in Europe and the United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bottom of stream (70), flocculent mass in freshwater stream (73).

11. **Gloeocapsa ralfsiana** (Harv.) Kütz., Tab. phyc., p. 18, Pl. XXIII (1845-9).

The dark red sheaths of this Alga were very conspicuous. Often the colour was so deep as to conceal completely the cell within. The cells without sheaths were 4-5μ in diameter; with sheaths, 8-25μ. The sheaths were very distinctly stratified, and usually showed a gradual fading of the red colour towards the surface. In many cases the cells were densely aggregated in groups of 4-8, the groups in turn being bunched in masses which were 90-130μ in diameter. More frequently the cells were loosely arranged in groups 60-90μ in diameter.

General Distribution. Widespread. Europe, Spitsbergen, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in seepage over rocks (141). Very abundant.

12. **Gloeocapsa rupestris** Kütz., Tab. phyc., p. 17, Pl. XXII, fig. 2 (1845-9).

A few groups of this species were found in a mass of filamentous Algae. The cells, without sheaths, were 6-10μ in diameter; with the sheaths, the diameter was 12-15μ. The sheaths were yellowish, and stratified.

General Distribution. On rocks; Europe, Iceland, Greenland, the United States, western Canada.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in "scum" from *Carex* stems (107).

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[1] Apparently new to Canada. (N.P.)

13. **Gloeocapsa rupicola** Kütz., Spec. Alg., p. 221 (1849).

Found in abundance in one collection. The cells were spherical and 2-3µ in diameter; in some cases they were slightly elongate, being 1·5-2 x 2-3µ. With the sheaths the cells were 5-8µ in diameter. The colonies were composed of 2-20 (or more) cells.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from a boulder in swift, freshwater stream (15), also Polunin July 26, 1936, from stagnant fresh water (42).

14. **Aphanocapsa elachista** W. & G. S. West, Jour. Linn. Soc., Bot., XXX, p. 276, Pl. XV, figs. 9-10 (1894).

A few small colonies of loosely aggregated cells 1·5-2µ in diameter.

General Distribution. Norway, Iceland, the United States, western Canada, the West Indies.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on bed of freshwater stream (28).

15. **Aphanocapsa grevillea** (Hass.) Rabenhorst, Flora Eur. Alg. II, p. 50 (1865).

Spherical to somewhat flattened colonies of this Alga were of frequent occurrence. The cells varied from 4-6µ in diameter.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, from a frozen freshwater pool (64), from a freshwater stream (144).
3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, from a slow, muddy streamlet (54); *Arctic Bay,* Polunin Sept. 10, 1936, in fresh water (12).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, scrapings from rocks in a freshwater lake (145), on wet mud (159).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), also Polunin Aug. 27, 1936, in seepage from a quartzite cliff (133); *Cape Dorset,* Polunin Aug. 25, 1936, floating masses (132).
8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, on damp marshy soil (110).

16. **Aphanocapsa muscicola** (Meneghini) Wille, Nyt. Mag. Naturv., LVI, p. 43, Pl. II, figs. 19-23 (1919).

In the specimens determined as belonging to this species, the cells were 2·5-3µ in diameter and occurred almost always in groups of four.

General Distribution. Europe.[1]

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936 (48).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on the leaves of an aquatic *Carex* in a pool (126).

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[1] Apparently new to the whole of America. (N.P.)

17. **Aphanocapsa pulchra** (Kütz.) Rabenhorst, Flora Eur. Alg. II, p. 49 (1865).

This Alga very closely resembles *Aphanocapsa grevillea.* In the present study, *A. pulchra* is made to include those colonies in which the cells are rather widely separated and of somewhat smaller diameter than in *A. grevillea.* As Geitler (1932, p. 159) points out, the two forms may yet belong to the same species.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from drying edge of a freshwater pool (50).

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from a boulder in a swift freshwater stream (15), also Polunin July 28, 1936 (66).

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Sugluk,* Polunin July 31, 1936 (109); *Cape Smith,* Polunin Aug. 3, 1936, on damp marshy soil (110), from margin of a lake (119).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from the bed of a freshwater stream (74).

18. **Aphanocapsa rivularis** (Carm.) Rabenhorst, Flora Eur. Alg. II, p. 49 (1865).

The colonies determined as belonging to this species are of irregular shape and considerable size. The cells are 4·5-6µ in diameter.

General Distribution. The United States.[1]

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23).

19. **Aphanocapsa roeseana** de Bary, Hedwigia, IX, p. 74 (1870).

This seems to be the identity of a single large colony, the cells of which are 6-7·5µ in diameter and very slightly elongated.

General Distribution. Germany.[2]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in a pool, drying up (125).

20. **Aphanocapsa arctica** *n. sp.*

Cells 8-10µ in diameter, rather closely packed in a colourless envelope, obscurely associated in groups of 2 or 4. Colonies more or less spherical and from 60 to 90µ in diameter. Cell contents light blue-green (in preserved specimens) and homogeneous.

Aphanocapsa cellulis sphaericis binis vel quaternis consociatis in tegumento hyalino; diametro 8-10µ. Familiis plus minusve globosis, diametro 60-90µ. Contentu cellularum homogenio, pallide caeruleo-virescente (spiritu conservato).

Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936 (151).

Type. See Plate III, figure 2.

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

21. **Microcystis elabens** Kütz., Tab. phyc., p. 6, Pl. VIII (1845-9).

Cells 2 x 3-3·5μ. The sheath is colourless and of indefinite shape.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in pool, on leaves of aquatic *Carex* (126).

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

var. **minor** Nygaard, Vidensk. Medd. Dansk. Nat. For., LXXXII, p. 204 (1926).

Cells 1·5 x 2·5-3μ, in formless colonies without distinct outline.

General Distribution. Malaya.[2]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from a freshwater stream (15).

22. **Microcystis firma** (Bréb. & Lenorm.) Schmidle, Bot. Jahrb., p. 57 (1902).

Of this species there were found only a few colonies, having an indefinite shape and composed of many cells 0·8-1·5μ in diameter. The cells, enclosed in a colourless sheath, are rather remote from one another and contain obvious pseudovacuoles.

General Distribution. Europe.[2]

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

23. **Microcystis flos-aquae** (Wittr.) Kirchn., in Engler-Prantl, Nat.-Pflanzenfam. I, Abt. 1a, p. 56, fig. 49n (1900).

Cells 3-3·5μ in diameter, densely massed in colourless sheath.

General Distribution. Europe, North America, Central America.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936 (48).

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

24. **Microcystis holsatica** Lemmerm., Krypt. Fl. Mark Brandenburg, III, p. 77 (1910).

The perforated nature of the colonies distinguishes this species. The cells are 1-1·3μ in diameter.

General Distribution. Europe, Asia, the United States.[1]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936 (151).

25. **Microcystis pulverea** (Wood) Forti, in De Toni, Syll. Alg. V, p. 92 (1907).

General Distribution. Europe, United States.[1]

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, from a freshwater stream (144).

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in seepage from a quartzite cliff (133), from a tundra pool (140), also Polunin July 28, 1936, scrapings from wet rocks (141).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in tiny freshwater pool (92).

26. **Microcystis robusta** (Clark) Nygaard, in Ostenfeld & Nygaard, Dansk. Bot. Ark., IV, p. 8, figs. 1-4 (1925).

Three spherical colonies with densely aggregated cells 6-7·5μ in diameter appear to belong to this species. Nygaard's fig. 4 shows a condition exactly like that found in the present collection.

General Distribution. Central America, Malasia.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a frozen pool (33).

27. **Merismopedia elegans** A. Br., in Kütz., Spec. Alg., p. 472 (1849).

Colonies composed of (8-) 16-32 cells were of frequent occurrence in one collection. The dimensions of the cells were 5·5-6·5 x 8·5-10μ.

General Distribution. Europe, Asia, the United States.[1]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on damp mud (164).

28. **Merismopedia glauca** (Ehrenb.) Nägeli, Gatt. einzell. Alg., p. 55, Pl. I D, fig. 1 (1849).

Colonies of this species were frequently found, often in abundance, and were usually composed of 16-64 or more cells. The size of the cells varied considerably in different collections and colonies, ranging from 3-5μ in breadth and from 4-6μ in length.

General Distribution. Europe, Iceland, Lapland, Novaya Zemlya, North America (the United States, southern Canada, western Canada), Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, from dried-up bed of freshwater pool, abundant (43).
3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, scrapings from rocks, in which it occurred infrequently (44), also Polunin Sept. 10, 1936, from submerged weeds in a lake, not common (60).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud, abundant (159).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from freshwater stream-bed (28), in fresh water (29).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-melting snow (93); *Cape Smith,* Polunin Aug. 3, 1936, from running fresh water (111), in stagnating seepage (117), from the margin of a lake (119).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, from sheath of a colonial animal (69).

29. **Merismopedia minima** G. Beck, Sched. ad Krypt. Exsicc. Cent. III, No. 227 (1897); Geitler, Rabenhorst's Kryptogamen-Flora, XIV, p. 263 (1930).

The colonies of this species were abundant and each composed of 16 or more cells. These cells were 0·5-1μ in diameter, and surrounded by a distinct sheath. *See* Plate I, figure 3.

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[1] Apparently new to Canada. (N.P.)

General Distribution. Tirol, Bombay.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, on rotting leaves of *Carex aquatilis* var. *stans* in fresh water (37). The colonies were quite numerous.

30. **Merismopedia punctata** Meyen, in Wiegm., Arch. f. Naturg., III, p. 67 (1837).

Not infrequent in the few localities in which it was found.

General Distribution. Europe, the United States.[2]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936 (12).
5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, from a tundra pool (140).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, from the bed of a freshwater stream (74).

31. **Merismopedia tenuissima**[3] Lemmerm., Bot. Centralbl., LXXVI, p. 154 (1898).

This species was sometimes very abundant.

General Distribution. Europe, the Faeröe Islands, Iceland, Greenland, the United States, western Canada.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on stems of *Carex aquatilis* var. *stans* in a shallow stream, abundant (55).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from the edge of a lake (16), also Polunin July 27, 1936, from a tundra pool, abundant (140).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23), from the sheath of a colonial animal (69). Not common.

32. **Gloeothece confluens** Nägeli, Gatti einzell. Alg., p. 58, Pl. I G, fig. 1 (1849).

Cells without sheaths 1·5-2 x 5-7μ; with sheaths, 6-10 x 10-12μ. Infrequent.

General Distribution. Europe, Iceland, the United States.[2]

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, from an eddy in a peaty brook (41).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, from the bed of a freshwater stream (74).

33. **Gloeothece palea** (Kütz.) Rabenhorst, Fl. Eur. Alg. II, p. 60 (1865).

The dimensions of the cells were 3-3·5 x 5-6μ. The sheaths were about 2μ thick, unstratified, and varied from colourless to a yellowish hue.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, from a tundra pool (140).

34. **Gloeothece rupestris** (Lyngb.) Bornet, in Wittrock & Nordstedt, Alg. exsicc. No. 399 (1880).

var. **maxima** (W. West) Geitler, Rabenhorst's Kryptog.-Fl., XIV, 1, p. 221 (1930).

G. cystifera (Hass.) Rabenhorst var. *maxima* W. West

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[1] Apparently new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

[3] Originally published as "Merismopedium tenuissimum." The generic rendering "Merismopoedium" is also incorrect. (N.P.)

Cells without sheath 10-11 x 19-20μ; sheaths 1-3μ thick.

General Distribution. England.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, from the bed of a tiny pool (134).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in scum from a *Carex* stem (107).

35. **Aphanothece castagnei** (Bréb.) Rabenhorst, Fl. Eur. Alg. II, p. 64 (1865).

Cells 3-3·5μ x 5-7·5μ. Colonies shapeless; not numerous.

General Distribution. Europe, Alaska, the United States.[2]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936 (151).
5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, from a tundra pool (140).
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

36. **Aphanothece clathrata** W. & G. S. West, Trans. Roy. Irish Acad., XXXIII, B (II), p. 111, Pl. X, figs. 9-10 (1906).

Colony elongate and irregular. Cells 0·8-1·2 x 3-3·8μ.

Envelope colourless.

General Distribution. North America, Scandinavia, Ireland.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, on rotten *Carex* leaves (37).

37. **Aphanothece microscopica** Nägeli, Gatt. einzell. Alg., p. 59, Pl. I H, fig. 1 (1849).

Cells 3 x 5-6μ. Evidently rare.

General Distribution. Europe, Iceland, the Faeröe Islands, Novaya Zemlya, Asia, Africa, North and South America, Greenland, Alaska, Australia.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in tiny freshwater pool (92).

38. **Aphanothece saxicola** Nägeli, Gatt. einzell. Alg., p. 60, Pl. I H, fig. 2 (1849).

There occurred extensive colonies without definite shape. The cells were 1-2 x 2-4·5μ.

General Distribution. Europe, the United States, western Canada, the West Indies.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, from the edge of a freshwater pool (50).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, on boulder, in swift stream (15), from bed of swift stream (28), in fresh water (29).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, from the sheath of a colonial animal (69).

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[1] I.e., of var. *maxima,* which appears to be new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

39. **Aphanothece stagnina** (Spreng.) A. Br., in Rabenhorst, Fl. Eur. Alg. II, p. 66 (1865).

A. prasina A. Br.

Colonies of this Alga were frequently found. They were more or less spherical and 0·4-1·2 mm. in diameter. The cells varied greatly in dimensions in different colonies, ranging from 4 x 7μ to 9 x 13μ, the last size being very rarely found.

General Distribution. Europe, Lapland, the Faeröe Islands, Iceland, North America (the United States and Alaska), Greenland, the Hawaiian Islands, Asia.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 10, 1936, on submerged plants in a lake (60).

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, from a tundra pool (21).

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage (93), from margin of a lake (104).

40. **Gomphosphaeria aponina** Kütz., Alg. exsicc. Dec. XVI, No. 151 (1836).

Two spherical colonies of this species were found among other Algae. The cells were pyriform and 10-12μ long by 4-7μ wide. *See* Plate I, figure 4.

General Distribution. Europe, the United States, western Canada.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, in a shallow stream (55).

PLEUROCAPSACEAE

41. **Oncobyrsa cesatiana** Rabenhorst, Fl. Eur. Alg. II, p. 68 (1865).

Several small plants that evidently belong to this species were found growing on the surface of a large *Nostoc* (*commune* Vauch.?) colony. The cells are up to 3μ in width and from 1-5 times as long; their contents are of a clear blue-green colour. *See* Plate I, figure 1.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).

CHAMAESIPHONACEAE

42. **Clastidium cylindricum** *n. sp.*

The plants first appear as small, subspherical bodies on the surface of living filamentous Algae (mostly *Oedogonium* sp., at least in the only known collection). These bodies enlarge to a diameter of 1-1·5μ and then elongate until they are 2-5μ long. As elongation progresses the apex may remain hemispherical or it may become conical and tipped with a very slender seta 2-4μ long (rarely a little longer). When maturity is reached, the

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[1] Apparently new to Canada. (N.P.)

plant begins to segment to form spores. These may be produced basipetally, or the entire upper part of the plant may be formed into 3-6 spores. During spore formation the apical seta, if present, disappears, and the basal part of the plant becomes distinctly urn-shaped. The cytoplasm is always homogeneous and, when preserved in fluid (glycerine-alcohol-formalin-water mixture), has a strong blue-green colour. The mature spores are 1-1·5μ in diameter. No sheath could be found in any of the numerous plants studied.

Clastidium cylindricum, diametro 1-1·5μ, longitudine 2-5μ, basi plus minusve angusto, apicis hemisphaericis vel conicis seta delicatissima ornatis. Sporis sphaericis, diametro 1-1·5μ, contentu cellularum homogenio. Epiphyticum in *Oedogonio* nonnullo.

Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on floating Algae in lake, upon *Oedogonium* (137).

Type. See Plate II, figure 1.

43. **Chamaesiphon cylindricus** Boye Petersen, The Botany of Iceland II, (2), 7, p. 272, fig. 2 (1928).

Typical examples of this species were common on filaments of *Zygnema* sp. in one collection. The plants were 2·5-3·5μ in diameter, and 8-11μ long. The sheaths were colourless and very thin. In spite of its smaller size and distinctly narrowed base, I also place here the *Chamaesiphon* figured in Plate II, figure 3.

General Distribution. Iceland.[1]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, from a freshwater lake, growing in great abundance on a plant of *Tolypothrix limbata* Thur. (145), on filaments of *Zygnema* and *Cladophora* sp., from fresh water (151).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on *Cladophora,* growing in a lagoon (88).

44. **Chamaesiphon incrustans** Grunow, in Rabenhorst, Fl. Eur. Alg. II, p. 149 (1865).

Specimens of this Alga were found in several vials and when present were usually very abundant, often forming a close covering over parts of the surface of various filamentous Algae.

General Distribution. Europe, the Faeröe Islands, Iceland, Greenland, North and South America, Asia, Africa, Australia.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on Algae (especially *Tolypothrix* sp.) scraped from a rock (148).

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, on Algae, from fast stream (59).

7. N. Labrador: *Burwell,* Polunin Sept. 25, 1936, on Alga (apparently a *Chaetomorpha*) from stones in a stream (150).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on *Cladophora* sp. from a brackish lagoon (78), on various Algae from a freshwater stream (73).

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[1] Apparently new to the whole of America. (N.P.)

In Plate II, figure 2a, are illustrated specimens of *Chamaesiphon incrustans,* which grew in abundance on *Dichothrix gypsophila.* The *Chamaesiphon* plants were 2·5-3·5μ in diameter and 10-15μ long. The apex of nearly all of them was more or less conical—often sharply so. The sheath was very delicate, often apparently lacking. The spores were solitary.

var. **elongatus** Starmach, Acta Soc. Bot. Polon., VI, p. 32, Pl. I, figs. 1-3 (1929).

This variety was found in abundance on a moss and on fragments of grass. The plants were 3-6μ in diameter and up to 40μ long. The greater number of them were bent, often conspicuously. Mature plants rarely had more than one exospore, the latter being 1·5-3μ broad. The sheaths were colourless. In most of the plants the cytoplasm was without granules, though a few showed faint granulation in the apical part. *See* Plate II, figure 2.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936 (154).

OSCILLATORIACEAE[1]

45. **Oscillatoria irrigua** [Küzt., Phyc. gen., p. 189 (1843)].[1] Gomont, Monogr. d. Oscillariées, p. 238, Pl. VI, figs. 22-3 (1893).

Numerous scattered filaments 6-8μ in diameter, with the cells 3-6μ long, were found in one collection.

General Distribution. Europe, Asia, Africa, Australia, Iceland, Spitsbergen.[2]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, with other Algae in scrapings from rocks in a freshwater lake (146).

46. **Oscillatoria limosa** [Agardh, Disp. Alg. Suec., p. 35 (1812)] [1]. Gomont, Monogr. d. Oscillariées, p. 230, Pl. VI, fig. 13 (1893).

Filaments 10-13μ in diameter; cells 2-5μ long. Growing among other filamentous Algae.

General Distribution. Cosmopolitan, including Greenland, Iceland, Spitsbergen, and Lapland.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 30, 1936, filamentous Algae from a stream formed by the melting of late-lying snow (105).

47. **Oscillatoria tenuis** [Agardh, Alg. Dec. II, p. 25 (1813)]. [1] Gomont, Monogr. d. Oscillariées, p. 240, Pl. VII, figs. 2-3 (1893).

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[1] According to the International Rules of Botanical Nomenclature, ed. 3 (Briquet 1935, p. 4), nomenclature in the *Nostocaceae homocysteae,* which include the members of the present family, should start only with the publication of Gomont's "Monographie des Oscillariées" in Ann. Sci. Bot. sér. 7, VI, p. 91, and VII, p. 263—i.e., in 1892-3. I have accordingly taken the liberty of placing square brackets around earlier *literature* citations throughout the *Oscillatoriaceae.* I have, however, not felt it to be my duty (or right, in opposition to the custom of the specialist collaborators) to place "earlier" authors' *names* in square brackets either here or in the Summary. (N.P.)

[2] Apparently new to the whole of America! (N.P.)

This is the *Oscillatoria* most frequently found in the present collection. It was generally mixed with other filamentous Algae, and occurred in a variety of habitats. The filaments were of various diameters, from 4·5-9μ; the cells were 2-3·5μ long.

General Distribution. Cosmopolitan, including Greenland, Iceland, Lapland, and the Faeröe Islands.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 6, 1936, on stones now dry (49).
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, scrapings from rocks in fresh water (44).
4. C. BAFFIN: Clyde, Polunin Sept. 15, 1936, scrapings from rocks in a lake (148), on wet mud (159).
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, in fresh water (18).

48. **Phormidium inundatum** [Kütz., Spec. Alg., p. 251, 1849].[1] Gomont, Monogr. d. Oscillariées, p. 192, Pl. IV, figs. 31-2 (1893).

An extensive sheet of this was found, composed of many more or less parallel filaments 3-4μ in diameter, embedded in pale straw-coloured, confluent sheaths.

General Distribution. Cosmopolitan.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, scrapings from rocks (44).

49. **Phormidium retzii** (Agardh) Gomont [Jour. d. Bot., IV, p. 355, (1890)]. Monogr. d. Oscillariées, p. 195, Pl. V, figs. 6-9 (1893).

The specimens of this Alga varied somewhat in dimensions, one having cells 4-4·5μ in diameter and about as long, another 5-6μ in diameter and 4-5μ long, and a third 6-8μ in diameter and 5-11μ long. In all examples the end cells of the filaments were rounded and had no evident wall-thickening.

General Distribution. Cosmopolitan.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 5, 1936, forming a scum on earth (49), also Polunin Sept. 5-6, 1936, in fresh water (30).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, scrapings from seepage over a quartzite cliff (133).

50. **Lyngbya aerugineo-caerulea** (Kütz.) Gomont, Monogr. d. Oscillariées, p. 166, Pl. IV, figs. 1-3 (1893).

Scattered filaments on the surface of *Nostoc commune* (*See* p. 35). Diameter of filament 4-5μ; cells 2-3μ long. End cells rounded.

General Distribution. Cosmopolitan.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 23, 1936, "brown jelly on damp soil" (26).

51. **Lyngbya epiphytica** Hieron., in Engler-Prantl, Nat.-Pflanzenfam. I, 1a, p. 67 (1898).

This species was found in patches on the surface of *Rhizoclonium* filaments. Its filaments were slightly under 2μ in diameter, the cells being 1·5-2μ long.

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[1] *See* footnote (1) on p. 28. (N.P.)

General Distribution. Cosmopolitan, occurring commonly in fresh water, but less frequently in salt.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from near high-tide level (169). Abundant.

52. **Lyngbya lagerheimii** (Möb.) Gomont [Journ. d. Bot., IV, p. 355 (1890)]. Monogr. d. Oscillariées, p. 167, Pl. IV, figs. 6-7 (1893).

The filaments of this were less than 2μ in diameter, twisting in loose spirals. Cells were 3-4μ long, granulate at end walls. End cell was rounded. *See* Plate II, figure 6.

General Distribution. Europe, America, Africa, Asia.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, jelly investing rocks in freshwater lake (146).

53. **Lyngbya lutea** (Agardh) Gomont [Journ. d. Bot., IV, p. 354 (1890)]. Monogr. d. Oscillariées, p. 161, Pl. III, figs. 12-3 (1893).

This Alga formed a layer on the damp surface of rocks between tide-marks. The filaments were 2·5-4μ in diameter, the trichomes 2-3·5μ. The cells were 1·5-3μ in length and without granulation.

General Distribution. A cosmopolitan species; occurring chiefly on rocks.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936 (180).

54. **Lyngbya nana** Tilden, Am. Alg. Cent. II, No. 179 (1896).

This Alga formed extensive layers of filaments, with trichomes 1-1·3μ in diameter. The filaments were very long, and straight; the sheaths were thin but distinct, and colourless. The cells were about as long as broad, or slightly shorter. The cells at the end of the trichome were frequently more or less separated and spherical. *See* Plate I, figure 5.

General Distribution. North America, on rocks.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on the sandy bottom of a dried-up streamlet (145).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bottom of tiny pool (92).

55. **Lyngbya nordgardii** Wille, Nyt. Mag. Naturv., LV, p. 32 (1917).

Several small patches of *Lyngbya* are somewhat hesitatingly placed in this species. The filaments grew on *Rhizoclonium* filaments, and were mostly attached in the middle and free at both ends. The diameter of the filaments was 2·5μ. The cells were 1-1·5μ long; near the end, the trichomes were very evidently constricted.

General Distribution. Coasts of Norway and California.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 25, 1936, from around high tide-mark (168).

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[1] Apparently new to Canada. (N.P.)

56. **Lyngbya ochracea** [Thuret, Ann. Sc. Nat. Bot. sér. 6, I, p. 379 (1875)]. Gomont, Monogr. d. Oscillariées, p. 169 (1893).

Very slender filaments 1-1·3μ in diameter, containing trichomes slightly constricted at the joints and a little less than 1μ in diameter. The colourless sheaths were very distinct.

General Distribution. North America, Europe, Iceland, Asia, Africa.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in scrapings from rocks in fresh-water lake (148).

57. **Lyngbya pusilla** (Rabenhorst) Hansgirg, Prodr. II, p. 84 (1892).

This species was found growing as an epiphyte on *Oedogonium* filaments, the plant differing from that described as *L. rigidula* (Kütz.) Hansg. in having rigidly projecting filaments, which are almost always straight. In *L. pusilla* the diameter of the filament varies from 1 to 1·4μ, the cells being as long as their diameter or slightly shorter. The filaments rarely exceed 50μ in length and are usually considerably shorter than this. No particular modification could be made out at the point of attachment to the *Oedogonium. See* Plate II, figure 4.

General Distribution. Bohemia.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, in a lake (137).

58. **Lyngbya rigidula** (Kütz.) Hansgirg, Prodr. II, p. 84 (1892).

In one collection, taken from a frozen stream at Pond Inlet on September 4, numerous sterile filaments of *Oedogonium* sp. were found. On these there were many specimens of *Lyngbya.* The latter consisted of short filaments, rarely reaching a length of 50μ, and mostly only 15-25μ, with a diameter of 1-1·8μ. The lower part of each filament was adnate to the *Oedogonium* cell, but the outer part was free and usually at a distinct angle with the lower part. The sheaths of the filaments were very thin, and colourless, and rarely projected more than 5μ beyond the apex of the trichome. The cells were about as long as their diameter, or slightly shorter. The apical cells were hemispherical and without a thickened end-wall. The Alga grew in groups of 6-20 filaments on *Oedogonium* sp. *See* Plate I, figure 7.

General Distribution. Bohemia.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, green filaments in ice in frozen stream (46).

59. **Lyngbya stagnina** [Kütz., Spec. Alg., p. 281 (1849)].

Filaments 12-14μ in diameter; trichomes 10-11μ; cells 2μ long. End cell rounded. The filaments were for the most part short.

General Distribution. Europe, Iceland.[1]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159).

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[1] Apparently new to the whole of America. (N.P.)

60. **Lyngbya subtilis** W. West, Jour. Roy. Micros. Soc., p. 741, Pl. X, fig. 58 (1892).

A few filaments of this species occurred singly among other Algae. Each filament was long and had a thin but sharply defined, colourless sheath about 2μ in diameter. The cells were 1-2 times as long as they were broad, the end ones being rounded. *See* Plate II, figure 7.

General Distribution. Europe, the United States, the West Indies, the Sandwich Islands, Java.[1]

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

61. **Lyngbya versicolor** (Wartm.) Gomont, Monogr. d. Oscillariées, p. 167, Pl. IV, figs. 4-5 (1893).

The diameter of the trichomes in this species was 3-3·5μ. The sheaths were dark yellow and very thick, and the filaments 6-8μ in diameter. The cells were 2-4μ in length and unconstricted except near the end of the trichome, where slight constrictions were sometimes observed.

General Distribution. Europe, North America (Alaska and the United States), the West Indies.[1]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, scrapings from rock in lake (148).

62. **Symploca muscorum** (Agardh) Gomont [Jour. d. Bot., IV, p. 354 (1890)]. Monogr. d. Oscillariées, p. 130, Pl. II, fig. 9 (1893).

Two masses of this Alga were found. The cells were 6μ in breadth and 6-9μ long.

General Distribution. Europe, Iceland, Asia, North and South America, the West Indies, Africa.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, from the sandy bottom of a dried-up streamlet (145).

63. **Microcoleus vaginatus** (Vauch.) Gomont [Jour. d. Bot., IV, p. 353 (1890)]. Monogr. d. Oscillariées, p. 93, Pl. XIV, fig. 12 (1893).

In one collection (No. 10, from Arctic Bay) this Alga occurred in fair abundance. The filaments were 45-70μ in diameter. They contained a few trichomes 7·5μ in diameter, with distinctly capitate apical cells. The sheaths were faintly stratified.

In the other collection (No. 125, from Lake Harbour) the few filaments found were 50-60μ in diameter and contained many (5-12) trichomes 4-4·5μ in diameter. The end cells in this collection were rounded and very rarely capitate. In each collection the cells were 3·5-6μ long. The sheaths were colourless.

General Distribution. Alaska, the United States, Iceland, Europe.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (10).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in a pool that was drying up (125).

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[1] Apparently new to Canada. (N.P.)

64. **Schizothrix braunii** (A. Br.) Gomont, Monogr. d. Oscillariées, p. 63, Pl. II, figs. 9-13 (1893).

In the present collection the sheaths of this Alga were almost black. Each branch ended in a long, tapering point. The trichomes were 1·6-1·7μ in diameter, and composed of cells up to 5μ long. Most of the filaments contained only a single trichome. In Plate III, figure 4, is figured a specimen in which the cells were noticeably shorter than in most specimens.

General Distribution. Europe, Alaska, Algiers.[1]

E. Arctic Occurrence.

4. C. Baffin : *Clyde,* Polunin Sept. 15, 1936, rock scrapings, freshwater lake (145).

65. **Schizothrix calcicola** (Agardh) Gomont, Monogr. d. Oscillariées, p. 45, Pl. VIII, figs. 1-3 (1893).

Abundant specimens of this *Schizothrix* were found growing upon and within *Rivularia* colonies. The plants were much branched, with the branches often very much contorted. The sheaths were colourless. The trichomes were 1-1·4μ in diameter and composed of cells 2-5μ long. *See* Plate I, figure 8.

General Distribution. Europe, Iceland, the United States, Asia, Africa.[1]

E. Arctic Occurrence.

3. N. Baffin : *Pond Inlet,* Polunin Sept. 4, 1936, from eddy in a peaty brook (41).

66. **Schizothrix fuscescens** [Kütz., Phyc. gen., p. 230 (1843)]. Gomont, Monogr. d. Oscillariées, p. 62, Pl. XI, figs. 4-6 (1893).

Several plants of this Alga were found. The sheaths were yellow or yellow-brown. The trichomes were 2-2·5μ in diameter, the cells being 4-6·5μ long. Distinct constrictions of the trichomes were often observed, but were not found in all cases.

General Distribution. Europe, Africa, Australia.[2]

E. Arctic Occurrence.

5. S. Baffin : *Lake Harbour,* Polunin July 26, 1936 (124).
8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, from the margin of a lake (119).

67. **Schizothrix lardacea** (Ces.) Gomont, Monogr. d. Oscillariées, p. 49, Pl. VIII, figs. 8-9 (1893).

The few specimens found consisted of long, sparsely branched filaments, each containing one or two (rarely several) trichomes. The sheaths were colourless. The trichomes were about 2μ in diameter, the cells 2-3·5μ long.

General Distribution. Europe, Iceland, North and South America, Alaska, Asia, Africa.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in the scum from a slimy *Carex* (107).

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

68. **Schizothrix vaginata** (Nägeli) Gomont, Monogr. d. Oscillariées, p. 40, Pl. VII, figs. 1-4 (1893).

Several small cushion-shaped masses of this Alga were found. They were composed of much-branched filaments, which were colourless or (rarely) faintly yellow. Except near its apex, each filament contained several closely-packed trichomes 2·5-3μ in diameter, with the cells 2-4μ long.

General Distribution. Europe, Asia, Africa.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from a swift freshwater stream (28), on a boulder in a swift freshwater stream (15).

NOSTOCACEAE[2]

Anabaena Bory

Isolated filaments belonging to members of this genus were found in a great many of the vials of Algae in the present collection. As they almost invariably lacked both heterocysts and gonidia, specific determination was impossible. One exception was:

69. **Anabaena variabilis** [Kütz., Phyc. gen., p. 210 (1842)].[2]

Many filaments of this were found scattered among filaments of other Algae.

General Distribution. Europe, Iceland, North America, western Canada.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from the margin of a tidal pool, on rocks (79).

Nostoc Vaucher

In this collection of Algae, *Nostoc* was one of the genera most frequently found. In many cases it was impossible to determine the actual species, owing to the lack of sufficient material or exact knowledge of the habitat. The following species are those in which heterocysts and sometimes spores were abundant, and which are sufficiently distinct to allow of determination.

70. **Nostoc aureum** [Kütz., Tab. phyc. II, p. 1, Pl. I, fig. 4 (1850)].

Several small colonies of this species were found.

General Distribution. Widespread; as far north as Floeberg Beach, latitude 82° 27′ north in Ellesmere (cf. Dickie 1880, p. 9).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, in fresh water (12).

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (29).

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[1] Apparently new to the whole of America. (N.P.)

[2] According to the International Rules of Botanical Nomenclature, ed. 3 (Briquet 1935, p. 4), nomenclature in the *Nostocaceae heterocysteae,* which include the present and next three families, should start only with the publication of Bornet and Flahault's "Révision des Nostocacées hétérocystées" in Ann. Sci. Nat. Bot. sér. 7, III, p. 323; IV, p. 344; V, p. 51; VII, p. 177—i.e., in 1886-8. I have accordingly taken the liberty of placing square brackets around earlier *literature* citations throughout the *Nostocaceae*, *Scytonemataceae*, *Stigonemataceae*, and *Rivulariaceae.* I have not, however, felt it to be my duty (or right, in opposition to the custom of the specialist collaborators) to place "earlier" authors' *names* in square brackets either here or in the Summary. (N.P.)

71. **Nostoc commune** [Vaucher, Hist. d. Conf. d'eau douce, p. 222, Pl. XVI, fig. 1 a-d (1803)].

General Distribution. Ubiquitous, including Alaska, western Canada, Labrador, Greenland, and Iceland.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen freshwater pool (64).
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 10, 1936, on a muddy slope (62).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in stagnant water (42), also Polunin July 26, 1936 (124); *Cape Dorset,* Polunin Aug. 25, 1936, on rotting leaves (37).
7. N. LABRADOR: *Burwell,* Polunin, July 23, 1936, on damp soil (26), also Polunin July 24, 1936, from margin of a tundra pool (21).
8. N. QUEBEC: Cape Smith, Polunin, Aug. 3, 1936, on damp soil (106), on wet marshy soil (110).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny pool (92).

72. **Nostoc kihlmani** Lemmerm., Ber. Deutsch. Bot. Ges., V, 18, p. 31 (1900).

Of this Alga several minute colonies 200-300μ long and 100-180μ broad were found. The filaments were loosely scattered and mostly short and twisting. The cells were 3-6μ in diameter and contained one to many distinct pseudovacuoles. The heterocysts were spherical and 8-9μ in diameter. *See* Plate II, figure 8.

General Distribution. Germany, Switzerland, Greenland.[1]

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in fresh water (89).

73. **Nostoc linckia** [(Roth) Bornet, in Bornet & Thuret, Notes Alg., p. 86, Pl. XVIII, figs. 1-12 (1880)].

Of this species there were found several small colonies, very soft and easily crushed. Trichomes were 3·5-4μ in diameter, and heterocysts spherical, 6μ in diameter.

General Distribution. Europe, North America, the Hawaiian Islands.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, in a pool that was drying up (125).

74. **Nostoc minutum** [Desmazières, Plantes Cryptog. de France, edit. 1, fasc. 11, No. 501 (1831)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, VII, p. 209 (1888).

Small, more or less spherical colonies 0·2-0·5 mm. across. Trichomes thick, much entangled, 2·5-3·5μ in diameter. Heterocysts spherical, 5μ in diameter.

General Distribution. Europe, North America, Alaska.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16).

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[1] Apparently new to Canada. (N.P.)

75. **Nostoc paludosum** [Kütz., Tab. phyc. II, p. 1, Pl. I, fig. 2 (1850)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, VII, p. 191 (1888).

Minute subspherical colonies. Sheaths dark yellow. Cells 3μ in diameter, heterocysts 4μ. Not abundant.

General Distribution. Widespread.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, on a raised beach (57).

76. **Nostoc pruniforme** [Agardh, Disp. Alg. Suec., p. 45 (1812)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, VII, p. 215 (1888).

A large mass (shape indeterminate), hollow, of deep brown colour, composed of loosely entangled filaments 5-6μ in diameter. Heterocysts subspherical, 7μ in diameter.

General Distribution. Europe, the Faeröe Islands, Iceland, North America, Asia, Africa.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, floating masses (132).

77. **Nostoc sphaericum** [Vaucher, Hist. d. Conf. d'eau douce, p. 223, Pl. XVI, fig. 2 (1803)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, VII, p. 208 (1888).

General Distribution. Europe, Iceland, North America, Alaska, northwestern Canada, Greenland, Africa.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in seepage from a quartzite cliff (133); *Cape Dorset,* Polunin Aug. 25, 1936, on rotting leaves, in fresh water (37).

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).

78. **Nostoc sphaeroides** [Kütz., Tab. phyc. II, p. 2, Pl. IV, fig. 1 (1850)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, VII, p. 212 (1888).

Many colonies of this species were found among moss plants. Cells in the main part of the trichomes were 7μ in diameter, but those at the end of the trichomes were only about 3μ. The heterocysts were spherical, and 7·5μ in diameter.

General Distribution. Europe, North America, Alaska.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936 (48).

SCYTONEMATACEAE[1]

79. **Scytonema crustaceum** [Agardh, Syst. Alg. p. 39 (1824)][1]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 106 (1887).

This Alga was found in one collection, completely embedded in irregularly shaped, calcareous nodules that were inside the hollow lobes of an extensive *Nostoc* colony. The filaments were 20-27μ in diameter, yellow to dark brown in colour, and showed fairly evident stratification near their ends. The trichomes, composed of cells having a length equal to or slightly less than their breadth, were 7·5-10μ in diameter; they were often quite obviously constricted towards their ends. The heterocysts were few in number, more or less spherical, and of about the same diameter as the trichome. *See* Plate I, figure 6.

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[1] *See* footnote (²) on p. 34. (N.P.)

General Distribution. Widespread; including northwestern Canada, Iceland, and Lapland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a shallow pool (67).

80. **Scytonema myochrous** [(Dillw.) Agardh, Disp. Alg. Suec., p. 38, Pl. IV (1812)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 104 (1887).

The coarse filaments of this species were 26-31μ in diameter, the trichomes 7μ.

General Distribution. Europe, Iceland, Spitsbergen, Asia, North America, Alaska, northern Canada, Greenland.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool, fresh water (21). Quite abundant.

81. **Scytonema ocellatum** [Lyngbye, Hydrophyt. Danica, 97, Pl. 28 a (1819)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 95 (1887).

A few filaments of this Alga were found. They were 13-15μ in diameter. The cells were nearly quadratic and 7·5-8μ broad. The heterocysts were cylindrical and measured 10 x 13μ.

General Distribution. Europe, North and South America, Asia, the East and West Indies, the Sandwich Islands.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

82. **Tolypothrix bouteillei** (Bréb. & Desm.) Lemmerm., Krypt. Fl. Mark Brandenburg III, p. 219 (1910).

Two small plants of this species were found. The trichomes were 5-5·5μ in diameter (slightly larger than is usually given). The cells were much shorter than their diameter, being 2-4·5μ long. The heterocysts were 4μ in diameter, and much flattened. The sheaths were dark brown and about 2μ thick. *See* Plate I, figure 10.

General Distribution. Europe (on wet rocks).[1]

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on a raised beach (57).

83. **Tolypothrix distorta** [Kütz., Phyc. gen., p. 228 (1843)]. Bornet & Flahault, Ann. Sci. Nat. Bot., sér. 7, V, p. 119 (1887).

Only a few plants were found.

General Distribution. Europe, Iceland, Lapland, Asia, Africa, Australia, North and South America, Alaska.

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[1] Apparently new to the whole of America. (N. P.)

E. Arctic Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, from margin of a lake (119).

var. **penicillata** (Agardh) Lemmerm., Krypt. Fl. Mark Brandenburg III, p. 218 (1910).

Tolypothrix penicillata (Agardh) Thuret

This variety was much more frequently found than the typical form.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, from the edge of a drying pool (50).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, from the bottom of a lake (118), July 28, 1936, in running water, drying up (136).
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 24, 1936, from the bottom of a pool (3).

84. **Tolypothrix lanata** [(Desv.) Wartmann, in Rabenhorst, Die Algen Sachsens, No. 768 (1858)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 120 (1887).

The diameter of the trichomes, 9-12μ, is the only basis used here to separate this species from *Tolypothrix tenuis* (*See* below). Many filaments occur with trichomes as small as 7μ.

General Distribution. Europe, the Faeröe Islands, Asia, North America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, from side of large lake (115).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in lake (23), from rocks in margin of tidal pool (79). In the latter collection the filaments were 16-18μ in diameter, the trichomes 10-12μ.

85. **Tolypothrix limbata** Thuret, in Bornet & Flahault, Ann. Sci. Nat. Bot., sér. 7, V, p. 124 (1887).

This Alga was never found in abundance, although on the other hand it could not be called scarce.

General Distribution. Europe, Iceland, Africa, North America, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on mud of lake (10).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, from sandy bottom of dried-up streamlet (145).
5. S. BAFFIN: *Lake Harbour,* Polunin July 28, 1936, in seepage over rocks (141).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in seepage from late-lying snow (93), in scum on slimy *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

86. **Tolypothrix tenuis** [Kütz., Phyc. gen., p. 228 (1843)]. Bornet & Flahault, Ann. Sci. Nat. Bot., sér. 7, V, p. 122 (1887).

This species was found more frequently than any other member of the genus. Usually it occurred in great abundance in the collection.

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[1] Apparently new to Canada. (N.P.)

General Distribution. Europe, Iceland, the Faeröe Islands, Novaya Zemlya, Asia, North and South America, Alaska, northwestern Canada, Greenland, Australia, the Antarctic.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936 (48), in a freshwater stream (144).
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8, 1936, floating (7), also Polunin Sept. 9, 1936, in scrapings from rocks (44), on mud of shallow lakeside (13), also Polunin Sept. 10, 1936, on submerged weeds in lake (60).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16), in a drying pool (125); *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves in fresh water (37).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), deposit in lake (97), scum on *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, floating mass in freshwater stream (73).

f. **minor** *n. forma*[1]

This seems the best disposition of many long slender plants found in a collection from the bottom of a stream. The filaments were 6-10μ in diameter, the trichomes 2-3·5μ in diameter. The cells were 4-9μ long. The heterocysts were cylindrical and only slightly broader than the trichomes. The sheaths were colourless. The branches were at a wide angle and often recurved.

Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in bed of stream (74).

Type. See Plate I, figure 11.

87. **Plectonema tomasinianum** Bornet, Bull. Soc. Bot. de France, XXXVI, p. 155 (1889).

var. **gracile** Hansgirg, Sitzber, kön. Böhmen Gesell. d. Wissensch., p. 338 (1891).

Not infrequent in two collections. *See* Plate II, figure 9.

General Distribution. Europe.[2]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, on moss in a swift freshwater stream (147).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in seepage from a quartzite cliff (133).

STIGONEMATACEAE[3]

Stigonema Agardh

Isolated hormogonia and fragments of plants belonging to this genus were very frequently encountered. Whole plants were less frequent, only the following five species being determinable.

88. **Stigonema informe** [Kütz., Spec. Alg., p. 319 (1849)].[3] Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 75 (1887).

General Distribution. Europe, Iceland, the Faeröe Islands, Lapland, Asia, Australia, North and South America, northwestern Canada, Greenland.

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[1] Dr. Whelden gave this no proper designation, but as it appears to be new I feel called upon to write the following diagnosis: A forma typica differt trichomatibus tenuioribus, 2-3·5 μ latis. (N.P.)

[2] I.e., of var. *gracile*, which is apparently new to the whole of America. (N.P.)

[3] *See* footnote (²) on p. 34. (N.P.)

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in a swift freshwater stream-bed (28).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in tiny freshwater pool (92).

89. **Stigonema mamillosum** [(Lyngb.) Agardh, Syst. Alg., p. 42 (1824)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 77 (1887).

There were very few specimens of this species.

Their many hormogonia, borne at the tips of the numerous short branches, were 12-18μ wide and 30-50μ long.

General Distribution. Europe, Lapland, Norway, the Faeröe Islands, Iceland, Asia, North America, Newfoundland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on boulder in swift stream (15).

90. **Stigonema minutum** [(Agardh) Hassall, British Freshwater Algae I, p. 230, Pl. LXVII, figs. 3-4 (1845)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 73 (1887).

The specimens were in the form of tiny cushions, deep brown in colour.

General Distribution. Europe, Iceland, the Faeröe Islands, Lapland, Norway, Asia, Africa, North and South America, Alaska, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in seepage over wet rocks (141).

91. **Stigonema ocellatum** [Thuret, Ann. Sci. Nat. Bot. sér. 6, I, p. 380 (1875)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 69 (1887).

Only three specimens of this Alga were found.

General Distribution. Europe, Iceland, Lapland, the Faeröe Islands, Asia, Africa, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a stream (53).

92. **Stigonema turfaceum** [(Berk.) Cooke, British Freshwater Algae, p. 272, Pl. CXI, fig. 2 (1884)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, V, p. 74 (1887).

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, Africa, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, from eddy in peaty brook (41).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

RIVULARIACEAE[1]

93. **Calothrix borealis** *n. sp.*

Several specimens of this plant were found scattered among (and entangled with) various other Algae. The filaments were very long (up to 0·8 mm.) and somewhat flexuous. Their diameter was 14-17·5μ and they tapered very slightly towards the tip, which ended in a slender hair. The trichomes were without constrictions, 9-10μ in diameter, and composed of cells 3-7μ long. The sheaths were homogeneous and colourless or, especially in the basal part, faintly yellow. The heterocysts were basal, and usually spherical but occasionally somewhat flattened.

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[1] *See* footnote (³) on p. 34. (N.P.)

Calothrix filis sparsis inter algas crescentibus, 0·6-0·9 mm. longis, 14-17·5μ crassis, basis cylindricis; vaginis non lamellosis, hyalinis vel luteis; trichomatibus 9-10μ crassis, attenuatis; cellulis 3-7μ longis; hormogoniis diametro 8-11μ. Hab. in aquis dulcibus inter algas filiformes.

This plant seems to be most closely related to *Calothrix cylindrica* Fremy (Revue Algol. I, p. 37, fig. 1a, 1924), from which it differs in habitat, in growing singly among other Algae, and in the length of the filament and absence of constrictions in it.

Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a shallow freshwater stream (47).

Type. See Plate II, figure 5.

94. **Calothrix braunii** Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 368 (1886).

Growing in small patches on dead *Carex.* Diameter of filaments 8-10μ; sheaths thin, colourless. Cells 6-8μ in diameter, shorter than long. Heterocysts somewhat flattened, 5-7μ broad.

General Distribution. Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves, in fresh water (37).

95. **Calothrix contarenii** (Zan.) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 355 (1886).

A single compact group of filaments 12-14μ in diameter was found. The cells were 5-7μ broad and about as long. The sheaths were homogeneous, 2-3μ thick and deep yellow. The single basal heterocysts were 5-7μ in diameter and subspherical. *See* Plate I, figure 9.

General Distribution. Europe, on earth, rocks, and woodwork in upper limits of tides; North America, the West Indies.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from rocks in margin of tidal pool (79).

96. **Calothrix fusca** (Kütz.) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 364 (1886).

Epiphytic on various Algae. Rather common.

General Distribution. Widespread, including Alaska.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in swift freshwater stream (28).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on *Carex* (107).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in tiny freshwater pool (92).

97. **Calothrix parietina** [Thuret, Ann. Sci. Nat. Bot. sér. 6, I, p. 381 1875)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 366 (1886).

In spite of the fact that one at least of the collections cited below was made in swiftly running water, it seems that the plants all belong in this species. The filaments are 10-13μ in diameter, the cells 6-8μ broad and 3-6μ long. The basal heterocysts are 7-8μ broad and 4-6μ long. The sheaths are quite thick, lamellate, somewhat funnel-shaped, and yellow-brown in colour.

General Distribution. Widespread, including Iceland, Greenland, northwestern Canada, and Alaska.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on boulder in stream (15), in swift stream (59), in seepage over wet rocks (141).
8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

98. **Calothrix pulvinata** [(Mertens) Agardh, Syst. Alg., p. 71 (1824)].

Growing singly on filaments of *Rhizoclonium,* often in considerable numbers. Diameter of filaments 14-16μ; of trichomes 9-12μ. Cells 3-5μ in length.

General Distribution. Europe, North America, Australia.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from near high-tide level (169).

99. **Dichothrix baueriana** (Grunow) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 375 (1886).

A single mass, composed of filaments 17μ in diameter with thick, homogeneous, yellowish sheaths. The trichomes were 6-7μ in diameter and ended in long, slender hairs. Cells somewhat shorter than broad. The basal heterocysts were subspherical.

General Distribution. Europe, North America, Alaska, the West Indies.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fast stream (59).

100. **Dichothrix compacta** Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 378 (1886).

Filaments 10-11μ in diameter, in a dense mass. Sheaths deep yellow, lamellose. Cells 6μ in diameter and 4-5μ long. Basal heterocysts nearly spherical.

General Distribution. Europe (Norway and Sweden), Iceland, the United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in bed of swift freshwater stream (28).

101. **Dichothrix gypsophila** (Kütz.) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 377 (1886).

Associated with *Schizothrix* in lime-encrusted masses. Sheaths dark brownish-yellow, prominently lamellose, ochreate. Filaments 16-18μ in diameter; cells 7-8μ in diameter, and about as long.

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[1] Apparently new to Canada. (N.P.)

General Distribution. Europe, Asia, America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on boulder in stream (15), also Polunin July 26, 1936 (124).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in tiny freshwater pool (92).

102. **Dichothrix horsfordii** (Wolle) Bornet, in Setchell, Erythea, IV, p. 190 (1896).

Filaments 24-30μ in diameter. Sheaths yellow, especially in lower part, distinctly lamellose, "fraying out" at outer end; trichomes 11-12μ in diameter, ending in a fine hair. Cells short, 3-5μ in length. Heterocysts hemispherical.

General Distribution. The United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (29).

103. **Dichothrix orsiniana** (Kütz.) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 376 (1886).

Penicillate fascicles of filaments 10-12μ in diameter, with golden-yellow, homogeneous sheaths. Trichomes 6-8μ in diameter; cells 3-7μ long. Heterocysts subspherical.

General Distribution. Europe, Iceland, Asia, Africa, North America.

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

104. **Dichothrix rupicola** Collins, Rhodora, III, p. 290 (1901).

Filaments 14-16μ in diameter, trichomes 6-9μ. Cells 4-9μ long. Sheaths brownish, lamellose. Heterocysts spherical. Forming a dense cushion 0·8 mm. thick and of considerable area.

General Distribution. Northeastern United States.[1]

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on rocks in margin of tidal pool (79).

105. **Rivularia biasolettiana** [Meneghini, in Zanardini, Synop. Algar. in mari Adriatico, p. 144 (1841)].

Hemispherical tufts, encrusted, soft and easily crushed, brownish coloured. Sheaths thick, funnel-shaped, yellowish, 16μ in diameter. Trichomes 6-7μ thick; cells 2-4μ long. Heterocysts spherical.

General Distribution. Europe, Iceland, Lapland, North America, Alaska, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in freshwater stream (144). Rare.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves (37). Abundant.

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[1] Apparently new to Canada. (N.P.)

106. **Rivularia compacta** Collins, in Collins, Holden & Setchell, Phyc. Bor.-Amer. Fasc. II, No. 508 (1898); Rhodora, I, p. 10 (1899).

Colonies nearly spherical, without lime, very small and dark coloured, composed of densely aggregated filaments 14-18μ in diameter. Trichomes 5·5-9μ in diameter, of cells 6-8μ long in basal part of trichome, 4-6μ in middle, and much longer in long and slender (hair-like) terminal part. Heterocysts spherical, 9-10μ in diameter.

General Distribution. The United States.[1]

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, in small pool, fresh water (64).

5. S. BAFFIN: *Lake Harbour,* Polunin July 28, 1936, in seepage over wet rocks (141).

107. **Rivularia dura** [Roth, Neue Beitr. Bot., p. 273 (1802)]. Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, p. 347 (1886).

Hard, lime-encrusted colonies almost impossible to crush, composed of densely aggregated filaments 12-13μ broad. Sheaths colourless and without lamellæ. Trichomes 7-7·5μ in diameter, cells at base 5-7μ long, in middle 3μ long. Heterocysts spherical, 8μ in diameter.

General Distribution. North America, Europe.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, from eddy in peaty brook (41).

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, in freshwater stream (143). Very hard and dense, dark brown colonies.

108. **Rivularia minutula** (Kütz.) Bornet & Flahault, Ann. Sci. Nat. Bot. sér. 7, III, p. 348 (1886).

Separate small colonies of this species were found, as well as clumps composed of several confluent colonies. All were soft and rather easily crushed, and without lime. Sheaths dark brown, distinctly lamellose, 18-24μ in diameter. Trichomes 9-10μ in diameter at base, where the cells were 7-10μ long. Above these the cells were 3-5μ long. Heterocysts spherical, 5-6μ in diameter.

General Distribution. North America, Europe, Norway.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936 (124).

var.?[2]

Colonies rather soft and easily crushed, hemispherical, up to 1·5 mm. across, dark greenish-black in colour. Filaments 18-20μ across. Sheaths golden-brown, not at all or faintly lamellose in the basal part, but distinctly lamellose in the ochreate outer part. Trichome 11-13μ across, ending in a long, projecting hair. Cells 2-5μ long, mostly with a very distinct row of granules at either end. Cells of hair 20-25μ long, 4-5μ in diameter. Heterocysts basal, single, 10-13μ in diameter. *See* Plate III, figure 8.

Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, on boulder in swift stream (15), in bed of swift freshwater stream (28).

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[1] Apparently new to Canada. (N.P.)

[2] In a recent letter Dr. Whelden indicates that this variant "may conceivably be merely a stage of the species". (N.P., October 1946.)

HETEROKONTAE

OPHIOCYTIACEAE

109. **Ophiocytium parvulum** (Perty) A. Br., Alg. unicell. gen. nov. vel minus cognita, p. 55 (1855).

In the present collection this Alga was only found in small numbers in two localities.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, soft jelly on rock in lake (146).
5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, in a mountain pool (139).

CHRYSOPHYCEAE

OCHROMONADACEAE

110. **Dinobryon marchicum** Lemmerm., in Pascher, Süsswasserfl. Deutschlands, Österreichs u. d. Schweiz II, Flagellatae 2, p. 67, fig. 102 (1913).

A rather common epiphyte on *Oedogonium* sp. in the one collection in which it occurred. Receptacles 7-8µ broad in widest part, 4-5µ at apex, and 20-24µ long. *See* Plate III, figure 1.

General Distribution. Europe.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134).

111. **Dinobryon sertularia** Ehrenberg, Abh. d. k. Akad. d. Wiss. Berlin, p. 280 (1833).

This plant was frequently found, usually in great abundance.

General Distribution. Europe, North America.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, in ice in frozen stream (46), in bed of tiny pool (134)).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, soft jelly on rock in freshwater lake (146).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, on lake bottom (118), also Polunin July 27, 1936, in tundra pool (140), also Polunin Aug. 27, 1936, from bed of swift freshwater stream (28), in fresh water (29).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97), scum on *Carex* (107).

112. **Dinobryon tabellariae** (Lemmerm.) Pascher, Süsswasserfl. Deutschlands, Österreichs u. d. Schweiz II, Flagellatae 2, p. 66, figs. 105 a-b (1913).

The solitary cells, 14-15µ long, have a broadly spindle-shaped receptacle 8-10µ in diameter at the widest part and 5µ at the apex. The species was not abundant. *See* Plate III, figure 9.

General Distribution. Europe, the United States.[2]

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, scum on *Carex* (107).

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[1] Apparently new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

CHLOROPHYCEAE

Volvocaceae

113. **Gonium pectorale** Müller, Vermium terrestrium et fluviatilium I, p. 60 (1773).

In only one instance was this genus found; but the preservation was excellent, showing the flat plate of 16 cells, each with two equal and very distinct cilia.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

Sphaerellaceae

114. **Sphaerella nivalis** (Bauer) Sommerfelt, Supplementum Florae Lapponicae, p. 204 (1826).

Chlamydomonas nivalis (Bauer) Wille

It was impossible to make out any details in the usually brilliant red cells of this Alga. Even when individuals lacking the red pigment were found, preservation was such that details were lost.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, red snow (56).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93); *Wolstenholme,* Polunin Aug. 24, 1936, red snow (32).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in tiny pool (92).

Palmellaceae

115. **Gloeocystis gigas** (Kütz.) Lagerheim, Öfv. Kgl. Vet.-Akad. Förh. Stockholm, XL, 2, p. 63 (1883).

In one collection (No. 116) the spherical cells were mostly in colonies of 4. These cells were 18-20μ in diameter, or with lamellated sheath 50-55μ. In the other collections the cells were in colonies of 8 and were 10-14μ in diameter; with the sheath they were 24-30μ.

General Distribution. Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug 20, 1936, in freshwater lake (84).

116. **Palmodictyon varium** (Nägeli) Lemmerm., in Pascher, Süsswasserfl. Deutschlands, Österreichs u. d. Schweiz V, Chlorophyceae 2, p. 37, figs. 12 a-b (1915).

Palmodactylon varium Nägeli

Two cylindrical colonies of this species were found. They were 20-30μ in diameter and contained loosely arranged cells 6-7μ in diameter.

General Distribution. Europe, North America.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum from slimy *Carex* (107).

TETRASPORACEAE

117. **Apiocystis brauniana** Nägeli, Gatt. einzell. Alg., p. 67, Pl. II a, fig. 1 (1848).

A single pyriform colony of this Alga was found. The twenty-odd cells, 4-6μ in diameter, were embedded in a very clear and soft gelatinous sheath. The colony was 130μ long, and 53μ broad in its widest part.

General Distribution. Europe, the United States, New Zealand.[1]

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in fresh water (89).

118. **Tetraspora lubrica** (Roth) Agardh, Syst. Alg., p. 188 (1824).

Irregular masses of cells 7-10μ in diameter.

General Distribution. Europe, Asia, New Zealand, North America.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, from eddy in peaty brook (41).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, flocculent mass in freshwater stream (73).

ULOTRICHACEAE

119. **Ulothrix flacca** (Dillw.) Thuret, in Le Jolis, Liste des algues marines de Cherbourg, p. 56 (1863).

This was one of the Algae most frequently encountered in the littoral zone.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 20, 1936, near low tide-mark (171).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, on seashore (120); *Cape Dorset,* Polunin Aug. 25, 1936, on damp earth (2).
7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, from brackish lagoon (17), also Polunin Sept. 25, 1936, from tidal lagoon (149).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 30, 1936, in pools near high-tide (122); *Sugluk,* Polunin July 31, 1936, in brackish marsh (98).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, high tide-mark (80), on stones in tidal pool (87), from tidal pool (83).

120. **Ulothrix implexa** Kütz., Spec. Alg., p. 349 (1849).

The filaments of this Alga were 6-10μ in diameter and composed of nearly quadrate cells.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, on rocks at mid-tide mark (36). Not abundant.

121. **Ulothrix laetevirens** (Kütz.) Collins, Tufts College Studies, II, 3, p. 186 (1909).

Branching occurred in the specimens observed, though rarely.

General Distribution. Europe, North America.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, green investment on rocks below high-tide level (17).

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[1] Apparently new to Canada. (N.P.)

122. **Ulothrix speciosa** (Carm.) Kütz., Tab. phyc. II, p. 29, Pl. XCIII, figs. 3 a-e (1850-2).

The filaments were 26-32μ in diameter and composed of cells 7-10 (-16)μ long.

General Distribution. Europe.[1]

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936 (183).
7. N. Labrador: *Burwell,* Polunin July 25, 1936, around high tide-mark (168), also Polunin Sept. 25, 1936, from brackish water (152).

123. **Ulothrix tenerrima** Kütz., Phyc. gen., p. 253, Pl. IX, figs. 1 b-c (1843).

The filaments of this species were 7-10μ in diameter and composed of cells 6-12μ long. The chromatophores, each with a single pyrenoid, occupied only one side of the cell.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, on stones in freshwater stream (112).

124. **Ulothrix zonata** (Web. and Mohr) Kütz., Flora, XVI, p. 519 (1833).

Filaments (17-)26-38μ in diameter; cells 1-1·7 times as long as broad. Chromatophore a distinct broad band occupying the middle of the cell.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, in a swift freshwater stream (58). Common.

125. **Uronema confervicolum** Lagerheim, Malpighia, I, p. 518, Pl. 12, figs. 1-10 (1887).

A species infrequently encountered in the present collection. The cells were 5-7μ in diameter, and 2·5-3 times as long. The apical cell tapered to a fairly sharp point.

General Distribution. Europe, the United States, the West Indies.[2]

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

126. **Stichococcus subtilis** (Kütz.) Klercker, Flora, LXXXII, p. 103 (1896).

Long filaments 6μ in diameter, with cells mostly 2-3 times as long as broad.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, long tassels in fast stream (129).

127. **Geminella interrupta** Turpin, Mém. Mus. d'Hist. Nat., Paris, XVI, p. 329, Pl. XIII, fig. 24 (1828).

The cells were distinctly paired, 6-7μ in diameter and 1·5-2 times as long.

General Distribution. Europe, the United States.[2]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in stream (53). Very infrequent.

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[1] Apparently new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

MICROSPORACEAE

128. **Microspora pachyderma** (Wille) Lagerheim, Ber. Deutsch. Bot. Gesell., V, p. 415 (1887).

This species occurred in abundance on grass and moss in one place. The diameter of the filaments varied from 8 to 15μ. The cells were 1·5-2 times as long as broad, and had walls 2·5μ thick. *See* Plate VIII, figure 8.

General Distribution. Europe, Greenland.[1]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, brown filaments (151).

129. **Microspora quadrata** Hazen, Mem. Torr. Bot. Club, XI, p. 178, Pl. XXIV, figs. 14-5 (1902).

Filaments 6-7μ in diameter, cells 5-7μ long. Rather infrequent, but distinct.

General Distribution. North America.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, rock scrapings, freshwater lake (145).

130. **Microspora stagnorum** (Kütz.) Lagerheim, Ber. Deutsch. Bot. Gesell., V, p. 417 (1887).

This was by far the most frequently found member of the genus, being often very abundant in the collections in which it occurred.

General Distribution. Europe, North and South America, Greenland, northwestern Canada.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134), frozen soil surface (4).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, soft jelly on rock in freshwater lake (146).
7. N. LABRADOR: *Burwell,* Polunin July 25, 1936, in freshwater seepage (20), in seepage over rocks (22).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in a slow stream (108), deposit in lake (97); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

131. **Microspora willeana** Lagerheim, in De Toni, Syll. Alg. I, p. 228 (1889).

Diameter of filaments 13-14μ; cells mostly 1-1·5 times as long as broad. This species in all its occurrences was mingled with other Algae, never being present in large quantity.

General Distribution. Europe, North America, Alaska.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept 4, 1936, in frozen stream (46); *Arctic Bay,* Polunin Sept 10, 1936, floating in lake (131).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, in freshwater stream (154).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in a slow stream (108).

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[1] Apparently new to Canada. (N.P.)

CHAETOPHORACEAE

132. **Draparnaldia glomerata** (Vauch.) Agardh, Disp. Alg. Suec., p. 41 (1812).

In one collection (No. 104) were found two distinct large specimens of this Alga. In the other collection there were fragments only, although these were still sufficient for specific determination.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), in scum on slimy *Carex* (107).

133. **Draparnaldia plumosa** (Vauch.) Agardh, Disp. Alg. Suec., p. 42 (1812).

Of this species three filaments were found, among other filamentous Algae.

General Distribution. Europe, the United States, Labrador.[1]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, in scrapings from rock in fresh-water lake (145).

134. **Aphanochaete repens** A. Br., Betracht. u. d. Erschein. d. Verjüngung in d. Natur, p. 196 (1851).

Herposteiron confervicolum Nägeli

In the two collections in which it was found, this Alga occurred in abundance.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept 4, 1936, in a stream (53). On *Oedogonium* sp.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104). On *Zygnema* sp.

COLEOCHAETACEAE

135. **Coleochaete scutata** de Brébisson, Ann. Sci. Nat. sér. 3, Bot. I, p. 29, Pl. II, figs. 1-8 (1844).

Very abundant in one station, but here always sterile.

General Distribution. Europe, Asia, North and South America, New Zealand.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, on *Carex* leaves (37).

TRENTEPOHLIACEAE

136. **Trentepohlia iolithus** (L.) Wallroth, Compendium florae germanicae IV, p. 151 (1833).

Although mature reproductive cells are lacking, the appearance and general nature of the plant seem sufficiently distinct to warrant this determination. The cells are 20-35µ wide, up to 50µ long, and somewhat swollen in the middle. The thick wall shows many striations. In the dried specimens the colour varies from grey to dark red-brown.

General Distribution. Europe, North America, Alaska.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, on dry rocks (2295a-157).

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[1] Apparently new to Canada. (N.P.)

CLADOPHORACEAE

Cladophora Kütz.

Fragments of plants belonging to this genus were very frequently found in the present collections. In general they were too scanty for specific identification, but the following three species were represented by material adequate for determination.

137. **Cladophora arcta** (Dillw.) Kütz., Phyc. gen., p. 263 (1843).[1]
Spongomorpha arcta (Dillw.) Kütz.

It is probable that many of the fragmentary specimens from Pangnirtung belong here.

General Distribution. Northern coasts of Europe and America, including Canada, Alaska, Greenland.

E. Arctic Occurrence.

(C. BAFFIN: ? *Pangnirtung,* Polunin Sept 20, 1936.)

7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936, in tidal lagoon (149).

138. **Cladophora hystrix** (Strömf.) De Toni, Sylloge Alg. I, p. 339 (1889).
Spongomorpha hystrix Strömfelt

A single plant with very thick cells, 200-400μ broad.

General Distribution. Northern North America, Greenland, Iceland.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 20, 1936, a harsh green Alga near low water-mark (173).

139. **Cladophora kuetzingiana** Grunow, in Rabenhorst, Flora Europ. Alg. aquae dulcis et submar. III, p. 342 (1868).

A single plant, rather delicate in habit, with filaments 50-60μ broad. The identity of other Algae in the same tube suggests that this plant was from fresh rather than brackish water.

General Distribution. North America.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a slightly brackish lagoon (88).

140. **Rhizoclonium hieroglyphicum** (Agardh) Kütz., Phyc. germ., p. 206 (1845).

Rhizoidal branches numerous, unicellular. Diameter of filaments 20-23μ.

General Distribution. Europe, Asia, North and South America, New Zealand.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936, from freshwater stream in salt-marsh (153).

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[1] In reply to inquiries about generic limits, etc., Dr. Whelden writes (*in litt.*): "Kützing created the genus *Spongomorpha* on the basis of intricately tangled basal branchlets . . . Long continued observation along the coast leads me to think the tangled basal branches may frequently be a result of environmental factors, such as currents and surf-pounding." (N.P., October 1946.)

var. **horsfordii** (Wolle) Collins, Tufts College Studies, II, 3, p. 329 (1909).

General Distribution. The United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, floating masses (132).

141. **Rhizoclonium riparium** (Roth) Harvey, Phyc. Brit. No. 314, Pl. CCXXXVIII (1846-51).

var. **implexum** (Dillw.) Rosenvinge, Medd. om Grønland, III, p. 915, fig. 34 (1893).

General Distribution. Europe, North America, Greenland, Alaska.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin Sept. 25, 1936, from brackish lagoon (162). Fairly abundant.

var. **validum** (Gobi) Foslie, in Wittrock & Nordstedt, Alg. exsicc. No. 624 (1884).[2]

Filaments 30-40μ in diameter.

General Distribution. Northern Europe, Greenland.[1]

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from near high water-mark (169).

142. **Hormiscia penicilliformis** (Roth) Fries, Corpus florarum provincialium Sueciae, Flora Scanica, p. 327 (1837).

Filaments 35-45μ in diameter, with cells about as long as broad.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on boulder between tide-marks (175).

143. **Chaetomorpha tortuosa** Kütz., Phyc. germ., p. 206 (1845).

General Distribution. Europe, North America, Alaska.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936 (1170a/24).

OEDOGONIACEAE[3]

144. **Oedogonium** Link

Filaments of plants belonging to this genus were of common occurrence, being found in no less than twelve collections. As the specimens were entirely sterile, specific determinations could not be made. The diameter of the vegetative cells suggests that at least two species are present, as some are 9-12μ broad, others 17-22μ.[1]

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[1] Apparently new to Canada. (N.P.)

[2] The "publication" of this combination seems to be far from valid! In Wittrock and Nordstedt's list of *exsiccatae*, No. 624 is merely given as "f.", and on the printed label the specimen is indicated as "Forma valida, crassit... M. Foslie" without there being the slightest intention of giving it a name. Nor is Gobi mentioned either in the list or on the label.

[3] According to the International Rules of Botanical Nomenclature, ed. 3 (Briquet 1935, p. 4), nomenclature in the *Oedogoniaceae* should start only with the publication of Hirn's "Monographie und Iconographie der Oedogoniaceen" in Act. Soc. Sci. Fenn., XXVII, No. 1—i.e., in 1900. I have accordingly taken the liberty of placing square brackets around all earlier *literature* citations in this family. I have not, however, felt it to be my duty, or right, to place "earlier" authors' *names* in square brackets either here or in the Summary. (N.P.)

Bulbochaete Agardh

Sterile plants belonging to this genus were found in vials of material from six different stations. In some cases the plants were minute, with cells 3·5-5μ in diameter; in others they were much larger. No attempt is here made to guess at the species represented. The following three species were found in good fruiting condition.

145. **Bulbochaete intermedia** [de Bary, Abhandl. d. Senckenbergisch. Gesellsch., I, p. 72, Pl. IV, figs. 1-7 (1854)]. Tiffany, The Oedogoniaceae, p. 35, Pl. I, fig. 5 (1930).

Vegetative cells 16-18 x 35-40μ; oogonia 40-42 x 29-32μ. Dwarf males 11 x 23μ. Abundant in two collections, but with only a few of the plants fruiting.

General Distribution. Europe, Africa, North America, Alaska, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, on a slimy *Carex* (107).

146. **Bulbochaete basispora** [Wittrock & Lundell, in Wittrock, Nova Acta Reg. Soc. Scient. Upsala, IX, 3, p. 50 (1874)]. Tiffany, The Oedogoniaceae, p. 31, Pl. IX, fig. 74 (1930).

In the one collection in which it occurred, sterile specimens of this species were abundant, but fruiting specimens were very rare. In the latter, the vegetative cells were 16-18μ in diameter and slightly longer than broad. The oogonia were 26-27 x 40-41μ. The pore of the oogonium was 5μ wide.

General Distribution. Sweden, the United States.[2]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in bed of swift freshwater stream (28).

147. **Bulbochaete repanda** [Wittrock, Nova Acta Reg. Soc. Scient. Upsala, IX, 3, p. 55 (1874)]. Tiffany, The Oedogoniaceae, p. 44, Pl. VI, fig. 47 (1930).

Vegetative cells 13-15 x 28-34μ. Oogonia 30-33 x 43-45μ. Fruiting plants were very rare in the present collection.

General Distribution. Europe, the United States, Greenland.[2]

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, Algae of lakeside (104).

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[1] For records from major districts, *See* Summary, p. 517. (N.P.)

[2] Apparently new to Canada. (N.P.)

Ulvaceae

148. **Enteromorpha intestinalis** (L.) Link, in Nees, Hor. Phys. Berol., p. 5 (1820).

The plants of the present collection were rather small.

General Distribution. Europe, Asia, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936 (160).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from near high tide-mark (80), in a tidal pool (83).

149. **Enteromorpha micrococca** Kütz., Tab. phyc. VI, p. 11, Pl. XXX, fig. 2 (1856).

Plants tubular, with a few simple branches; membrane 14-18μ thick. Cells 3-5μ broad, angular, irregularly placed.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in saltmarsh (128).
5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936 (1170a/24).

150. **Enteromorpha minima** Nägeli, in Kütz., Spec. Alg., p. 482 (1849).

Small, tubular fronds composed of irregularly placed cells 5-8μ broad. Membrane of frond 10μ thick. Branching very sparse.

General Distribution. Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on rocks at half-tide mark (36).

151. **Enteromorpha prolifera** (Müll.) J. G. Agardh, Lunds Univ. Årsskr., XIX, p. 129, Pl. IV, figs. 103-4 (1882).

var. **arctica** (J. Agardh) Collins, Tufts College Studies, II, 3, p. 203 (1909).

Plants with membranes 20μ thick and composed of cells 10-12μ broad. Cells show very vague linear arrangement or none at all in the older parts of the plant, but are placed in lines in younger parts.

General Distribution.[1] Spitsbergen, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from between tide levels (165), from near high-water mark (169).

var. **trabeculata** Rosenvinge, Medd. om Grønland, III, p. 961, fig. 55 (1893).

This variety is distinguished by the very distinct "trabeculae" traversing the central cavity of the plant. The individuals have long, slightly flexuous branches. The membrane is 18μ thick, the cells 8-12μ broad.

General Distribution. Greenland.[2]

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[1] I.e., of var. *arctica*, which is apparently new to Canada. (N.P.)

[2] Apparently new to Canada. (N.P.)

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on rocks near high tide-mark (63).

152. **Enteromorpha ramulosa** (J. E. Sm.) Hooker, British Flora II, 1, p. 315 (1833).

The much-branched plants are characterized by numerous, short, spine-like ramuli. The cells are 8-12μ in diameter, but appear to have no particular arrangement except in the final branches where they are clearly in longitudinal rows.

General Distribution. Europe, Australia, North America.

E. Arctic Occurence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, in a brackish lagoon (8).
5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, in a brackish pool (16a).
7. N. Labrador: *Burwell,* Polunin Sept. 25, 1936, in a brackish pool (152).

153. **Monostroma fuscum** (Postels & Ruprecht) Wittrock, Forsök till en Monographi öfver algsläglet *Monostroma,* p. 53, Pl. IV, fig. 13 (1866).

General Distribution. Northern Europe, North America, Alaska, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936 (172), in a tidal pool (167).

SCHIZOGONIACEAE

154. **Prasiola crispa** (Lightf.) Meneghini, Cenni sulla organografia e fisiologia della alghe, p. 36 (1838).

This would seem to be a very common Alga in those places where nitrogenous wastes accumulate, at least in the region covered by the present expedition.

General Distribution. Europe, North America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, on damp soil around Eskimo dwellings (11).
4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, on damp soil (161), in run-off from skin tent (176).
7. N. Labrador: *Burwell,* Polunin July 23, 1936, on open soil frequented by sledge-dogs (142), also Polunin July 25, 1936, in freshwater seepage (20).

HYDRODICTYACEAE

155. **Pediastrum boryanum** (Turpin) Meneghini, Linnaea, XIV, p. 210 (1840).

In only one (No. 3, from Wolstenholme) of the several vials in which it was found did this species occur at all plentifully.

General Distribution. Europe, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wolstenholme,* Polunin Aug. 24, 1936, from bottom of a pool (3); *Cape Smith,* Polunin Aug. 3, 1936, from margin of lake (119).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69), also Polunin Aug. 20, 1936, flocculent mass in fresh-water stream (73), on the bottom of a slightly brackish lagoon (78).

var. **longicorne** Raciborski, Akad. Umiej. w. Krakowie, XX, p. 14 (1889).

Found with the typical form. The projections from the marginal cells were 18-22μ long, and had a distinctly swollen apex 4-5μ in diameter.

General Distribution. Europe, Greenland.[1]

E. Arctic Occurrence.

8. N. Quebec: *Wolstenholme,* Polunin Aug. 24, 1936, from bottom of a pool (3).

156. **Pediastrum tetras** (Ehrenb.) Ralfs, Ann. and Mag. of Nat. Hist., XIV, p. 469, Pl. XII, fig. 4 (1844).

A very few specimens were found.

General Distribution. Europe, Asia, North and South America, north-western Canada.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on damp mud (164).

OÖCYSTACEAE

Oocystis Nägeli

Specimens belonging to this genus were frequently found, usually in rather small numbers but evenly spread throughout the collection. In two vials (Nos. 6 and 131, both from Arctic Bay), determination of the species was particularly difficult. In both, the *Oocystis* plants showed a wide range of variation—not only in size but also in shape, and moreover in the nature and amount of the thickening of the wall at the apex of the cells. In Plate IV are figured representative specimens that show the range in size from those like that represented by figure 3, in which the cells have the dimensions 25 x 13-14μ and lack polar nodules (this could be *Oocystis elliptica* W. West), through those represented by figures 5 and 6, where the dimensions are 35-38 x 22-23μ and some of the cells show distinct polar nodules (could this be *Oocystis solitaria* Wittrock?), to such plants as those represented by figures 12 and 15, where the individual cells are 50-55 x 33-40μ and sometimes show an obvious apical thickening (which suggests *Oocystis gigas* Archer). As G. M. Smith (1933, p. 501) has pointed out, there is need for further study of the range of variation in this genus; at the moment we do not know what the limits of the species are. The specimens from these two vials suggest that extreme variation may be found under natural conditions.

The species given below are those that were found in vials where fairly narrow limits of variation occurred; except in the case of *O. naegelii* (*See* p. 57) they do not include any consideration of plants from the two vials mentioned above.

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[1] **Apparently new to Canada. (N.P.)**

157. **Oocystis borgei** Snow, Bull. U.S. Fish Comm., XXII, p. 379, Pl. II, fig. 7 (1-5) (1903).

The colonies of this species were 4-8 celled. Although frequently found they were never numerous. The size of the cells varied from 15-16 x 9-10μ to 16-18 x 12-13μ. Each cell had 1 or 2 plastids.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a stream (53).

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, from the sandy bottom of a dried-up streamlet (145).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23).

158. **Oocystis elliptica** W. West, Jour. Roy. Micros. Soc., p. 736, Pl. X, fig. 56 (1892).

Most of the colonies of this species, which was fairly abundant, contained 4-8 cells. The dimensions of the cells were 20-24 x 12-13μ.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept 4, 1936, from eddy in peaty brook (41).

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), also Polunin July 30, 1936, in seepage from late-lying snow (105).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

159. **Oocystis gloeocystiformis** Borge, Botaniska Studier tillagnade F. R. Kjellman, p. 23, Pl. II, fig. 1 a-b (1906).

Several specimens of this Alga were found. In each there were several colonies of four cells within an extensive general membrane. The cells had pointed ends and dimensions of 10-12 x 4-6μ. *See* Plate VIII, figure 2.

General Distribution. The United States, South America.[1]

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69).

160. **Oocystis naegelii** A. Br., Algarum unicellularum genera nova vel minus cogn., p. 94 (1855).

The plants of this species varied considerably in size, ranging from 22-23 x 12-13μ (a few specimens in vial No. 6, one of which is shown in Plate IV, figure 1) to 35-42 x 20-23 (-28)μ. All cells had rounded ends with no wall-thickening, and each contained a single chloroplast. The plants were never present in any major quantity.

General Distribution. Europe, North America.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, on *Carex* stalks (6), on submerged weeds in a lake (60).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in lake (23), in bed of freshwater stream (74).

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[1] Apparently new to Canada. (N.P.)

161. **Oocystis nodulosa** W. & G. S. West, Jour. Roy. Micros. Soc., p. 15, Pl. II, fig. 31 (1894).

A few plants of this were found. The cells were characterized by an inwardly projecting, rounded thickening, and measured 31-34 x 17-20μ, which is slightly larger than the dimensions usually given for this species.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, on submerged weeds in a lake (60).

162. **Ankistrodesmus falcatus** (Corda) Ralfs, British Desmidieae, p. 180, Pl. XXXIV, figs. 3 a-d (1848).

Found in several collections, but never in any great numbers.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, in fresh water (12).

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, brown, filamentous Algae (151), on damp mud (164).

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in pool, on aquatic *Carex* (126).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

163. **Closteriopsis brevicula** *n. sp.*

Many specimens of this Alga were found scattered among filamentous species. In general they occurred singly, but sometimes they were loosely associated in groups of 2-4 cells lying parallel to one another. The cells were straight or slightly curved or else sigmoid, and had bluntly rounded ends. There was a single chloroplast extending through the central part of the cell and having within it a single linear row of 5-10 pyrenoids. The diameter of the cell was 11·5-12·5μ and the length 13-14 times this value, i.e., 150-175μ.

Cellulis solitariis vel 2-4 aggregatis, 11·5-12·5μ latis, 150-180μ longis, rectis vel curvatis, apicibus rotundatis; chloroplastido singulo axile; pyrenoidibus 5-10, in serie simplici dispositis.

Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island (South Bay),* Polunin Aug. 22, 1936, in bed of tiny pool (5).

Type. See Plate III, figure 5.

SCENEDESMACEAE

164. **Scenedesmus bernardii** G. M. Smith, Trans. Wisc. Acad. Sci. Arts and Lett., XVIII, 2, p. 436, Pl. XXV, fig. 6, and Pl. XXXIII, figs. 196-208 (1916).

General Distribution. Wisconsin.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a mountain pool (139).

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[1] Apparently new to Canada. (N.P.)

165. **Scenedesmus bijugus**[1] (Turpin) Lagerheim, Nuova Notar., p. 158 (1893).

Cells about 10 x 4μ, forming flat, regular coenobia. The ends of the cells are rounded, and have neither teeth nor spines.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug 19, 1936, on the sheath of a colonial animal (69). Rather infrequent.

166. **Scenedesmus obliquus** (Turpin) Kütz., Linnaea, VIII, p. 609 (1833).

Occurring in very small numbers in each of the three collections cited below.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in lake (23), from bottom of stream (70), from bottom of slightly brackish lagoon (78).

167. **Scenedesmus quadricaudus** (Turpin) de Brébisson, Mém. de la Soc. Acad. de Falaise, p. 66 (1835).

Cells 12 x 4μ, with spines 8μ long.

General Distribution. Europe, Asia, New Zealand, North America, Greenland, northwestern Canada.

E. Arctic Occurrence.

8. N. Quebec: *Wolstenholme,* Polunin Aug. 24, 1936, from bottom of pool (3). Rare.

VAUCHERIACEAE

168. **Vaucheria** De Candolle

Sterile specimens belonging to this genus were found in three vials collected at Port Burwell in northernmost Labrador.

ZYGNEMATACEAE[2]

169. **Mougeotia** Agardh

Specimens belonging to this genus were found in fifteen vials, usually in small numbers among other filamentous Algae. Good examples were collected at Craig Harbour, Dundas Harbour, Pond Inlet, Arctic Bay, Clyde (three times), Lake Harbour, Port Burwell, and Wakeham Bay (twice). The diameters of the filaments suggested that there were two species present; the greater number of filaments varied from (7-) 10-13μ, whereas a few were from 21-23μ in diameter.

Zygnema Agardh

Specimens belonging to this genus were present in no less than 53 separate collections, often being the only Alga found in the vial. Nearly all specimens were 20-28μ in diameter, a few were 13-18μ, and two were 8-9μ. The following two species were found in good fruiting condition.

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[1] Published as *S. bijuga*, but this and the oft-repeated rendering *S. bijugatus* (Turp.) Kützing are both erroneous, as the species is based on *Achnanthes bijuga* Turpin and the generic name *Scenedesmus* is clearly masculine (cf. Meyen, Nov. Act. Leopold. Carol., XIV, 2, p. 774 (1829)). (N.P.)

[2] This is the spelling employed e.g. by Smith (1933). (N.P.)

170. **Zygnema cyanospermum** Cleve, Nova Acta Reg. Soc. Sci. Upsala, ser. 3, VI, p. 28, Pl. VIII, figs. 6-8 (1868).

The spores of this species are blue-black and globose. When fully mature, they are distinctly punctate with rather large punctæ, and 30-35μ in diameter. The vegetative cells are 18-21μ in diameter, and 1·5-2 times as long. The punctæ are not apparent until the spores are mature. *See* Plate III, figure 6.

General Distribution. Northern Europe, Greenland.[1]

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, scum on *Carex* (107).

171. **Zygnema peliospermum** Wittrock, Bot. Notiser, p. 188 (1868).

Fruiting specimens of this Alga were not abundant. The vegetative cells were 22-25μ in diameter and 1·5-3 times as long. The fertile cells were markedly swollen on the inner side. The spores were spherical and 33-36μ in diameter, almost black in colour, and possessed of a scrobiculate medium membrane.

General Distribution. Europe, North America.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny fresh-water pool (82).

Spirogyra Link

Spirogyra filaments were found in seven vials, four of them from N. Baffin, two from N. Quebec, and one from Chesterfield on the W. Coast of Hudson Bay. All but one of the collections were sterile and had 1-banded (in one case 1- or 2-banded) cells 16-24μ in diameter. The fertile material was identified as:

172. **Spirogyra inflata** (Vauch.) Rabenhorst, Deutschlands Krypt.-Flora II, p. 120 (1847).

var. **foveolata** Transeau, Am. Jour. Bot., I, p. 291 (1914).

Very few fruiting filaments were found, and these were for the most part immature. Vegetative cells with a single plastid, 15-18μ in diameter and 3-6 times as long. Fertile cells much swollen. Spores 28-32 x 58-64μ, yellowish-brown, with a scrobiculate wall.

General Distribution.[2] The United States.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, a deposit in a lake (97).

MESOTAENIACEAE

173. **Gonatozygon kinaharii** (Arch.) Rabenhorst, Flora Europ. Alg. III, p. 156 (1868).

Cells 10-12μ broad, 320-360μ long. Wall smooth.

General Distribution. Europe, the United States.[1]

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[1] Apparently new to Canada. (N.P.)

[2] I.e., as regards the variety, which appears to be new to Canada. (N.P.)

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rock in freshwater lake (146). Not infrequent.

174. **Gonatozygon monotaenium** de Bary, Hedwigia, I, p. 106 (1856).

Among other Algae, including many species of desmids. Cells 8-10μ broad, 200-260μ long. Apices of cells slightly broadened. Wall densely granulate.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, the East Indies, North and South America, the West Indies, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, from bed of tiny pool (134).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74), in a freshwater lake (84).

175. **Cylindrocystis brebissonii** Meneghini, Cenni sulla organografia e fisiologia delle alghe, p. 5 (1838).

Very few specimens of this species were found.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, the East Indies, Africa, North and South America, the West Indies, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159).

DESMIDIACEAE[1]

176. **Penium cylindrus** (Ehrenb.) de Brébisson, in Ralfs, British Desmidieae, p. 150, Pl. XXV, figs. 2 a-c (1848).

This was found in small numbers along with various other desmids.

General Distribution. Europe, Lapland, the Faeröe Islands, North and South America.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 23-5, 1936, in seepage from cliff (22).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a freshwater pool (76).

177. **Penium libellula** (Focke) Nordstedt, Vidensk. Medd. f. d. naturh. Foren. Kjøbenhavn, p. 184 (1888)[2].

var. **intermedium** Roy & Biss., Ann. Scottish Nat. Hist., p. 252 (1894).

Length 112-115μ; diameter 18-19μ. Only a few specimens were found.

General Distribution. England, Russia, Asia, North America.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159).

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[1] According to the International Rules of Botanical Nomenclature, ed. 3 (Briquet 1935, p. 4), nomenclature in the *Desmidiaceae* should start only with the publication of Ralfs's "British Desmidieae"—i.e., in 1848. I have accordingly taken the liberty of placing square brackets around all earlier *literature* citations in this family. I have not, however, felt it to be my duty (or right, in opposition to the custom of the specialist collaborators) to place "earlier" authors' *names* in square brackets either here or in the Summary. (N.P.)

[2] I would now place this species as *Closterium libellula* Focke, Phyc. Stud., p. 58, Pl. III fig. 29 (1847)—R.M.W., September 1946.

178. **Penium margaritaceum** (Ehrenb.) de Brébisson, in Ralfs, British Desmidieae, p. 149, Pl. XXV, figs. 1 a-c (1848).

Of infrequent occurrence. Cells 110-115μ long, 20-25μ broad.

General Distribution. Europe, Spitsbergen, the Faeröe Islands, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of fresh-water stream (74).

179. **Penium spirostriolatum** Barker, Quart. Jour. Micros. Soc., IX, p. 194 (1869).

Cells 150-160μ long, 23-25μ broad. This species was fairly abundant in a vial in which many other desmids were found.

General Distribution. Europe, Asia, North America, northwestern Canada.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

180. **Penium truncatum** de Brébisson, in Ralfs, British Desmidieae, p. 152, Pl. XXV, figs. 5 a-g (1848).

A rare desmid in its one collection. Length of cells 25-26μ, diameter 12μ.

General Distribution. Europe, North America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, from the surface of frozen soil (4).

181. **Closterium abruptum** W. West, Jour. Roy. Micros. Soc., p. 719, Pl. IX, fig. 1 (1892).

Never an abundant constituent of the algal flora in the present collections. Cells 100-180μ long, 12-18μ broad.

General Distribution. Europe, Asia, Africa, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, a deposit in a lake (97).

182. **Closterium cornu** [Ehrenberg, Beiträge zur Kenntniss des Organisation der Infusorien, p. 53 (1830)].[1]

Present in small numbers in one collection, associated with various other desmids, many of which belong to the same genus. Length of cells 100-130μ, breadth 8-10μ. Wall smooth and colourless.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, northwestern Canada.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a slow, muddy streamlet (54).

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[1] *See* footnote (1) on p. 61. (N.P.)

183. **Closterium cynthia** De Notaris, Desmid. Ital., p. 65, Pl. VII, fig. 71 (1867).

Found in fair abundance in one gathering. Cells 100-120μ long, 15-18μ broad. Wall faintly striate, pale yellowish-brown.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).

184. **Closterium decorum** de Brébisson, Mém. Soc. imp. d. Sci. nat. de Cherbourg IV, p. 151, Pl. II, fig. 39 (1856).

Several specimens were found.

General Distribution. Europe, Asia, Australia, North America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a slow, muddy streamlet (54).

185. **Closterium dianae** [Ehrenberg, Die Infusionsthierchen als vollkommene Organismen, p. 92, Pl. V, fig. 17, 1-6 (1838)].

Not abundant. Cells 180-200μ long, 20-21μ broad. Wall smooth and pale brownish coloured.

General Distribution. Europe, Spitsbergen, the Faeröe Islands, Iceland, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in a swift freshwater stream (28).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a freshwater pool (76).

var. **arcuatum** (Bréb.) Rabenhorst, Flora Europ. Alg., III, p. 133 (1868).

Occurring in a collection rich in many other desmids. Cells 170-180μ long and 18-19μ broad.

General Distribution. Europe, Asia, Africa, Australia, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

186. **Closterium didymotocum** [Corda, Almanach de Carlsbad, p. 185, Pl. V, figs. 64-5 (1835)]. Ralfs, British Desmidieae, p. 168, Pl. XXVIII, figs. 7 a-b (1848).

Several specimens of this were found associated with other species of *Closterium.* Length of cells 300-325μ, breadth 35-38μ. Wall faintly striate in the specimens examined, yellowish brown, with the polar regions darker.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a freshwater pool (76).

187. **Closterium ehrenbergii** [Meneghini, Linnaea, XIV, p. 232 (1840)].

var. **malinvernianum** (De Not.) Rabenhorst, Flora Europ. Alg. aquae dulcis et submar. III, p. 131 (1868).

Only one specimen of this desmid was seen. It was 260μ long and 42μ broad. The cell wall was pale brown and showed about 12 longitudinal striæ in every 10μ of width. *See* Plate VIII, figure 1.

General Distribution. Europe, Asia, Africa, the United States.[1]

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, in a shallow pool (67).

188. **Closterium jenneri** Ralfs, British Desmidieae, p. 167, Pl. XXVIII, figs. 6 a-c (1848).

Not found in abundance. Cells 80-90μ long, 10-12μ broad. Wall smooth and colourless.

General Distribution. Europe, the Faeröe Islands, Novaya Zemlya, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936 (127).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, from margin of lake (119).

var. **robustum** G. S. West, Jour. Bot., XXXVII, p. 112, Pl. CCCXCVI, fig. 9 (1899).

The specimens found were 48-53μ long and 13-14μ broad. They had smooth walls of a brownish colour, and were somewhat stouter in appearance than is usual for this variety. *See* Plate V, figure 2.

General Distribution. Europe, Asia, Africa, North and South America.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

189. **Closterium kuetzingii** de Brébisson, Mém. Soc. imp. Sc. nat. de Cherbourg, IV, p. 156, Pl. II, fig. 40 (1856).

Found mixed with many other desmids; not abundant. Length of cells 360-420μ, breadth 16-24μ. Wall pale brownish coloured, with 16-22 striæ visible (averaging 10 striæ to every 10μ of width).

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

190. **Closterium lanceolatum** [Kütz., Phycologia german., p. 130 (1845)].

Very few specimens found. They were 220-230μ long and 40-50μ broad, and had smooth, colourless walls.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, from bottom of stream (70), from bottom of slightly brackish lagoon (78).

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[1] Var. *malinvernianum* is apparently new to Canada. (N.P.)

191. **Closterium macilentum** de Brébisson, Mém. Soc. imp. Sc. nat. de Cherbourg, IV, p. 153, Pl. II, fig. 36 (1856).

Not common. Cells 230-300µ long, straight except for the slightly incurved ends, 10-12µ broad. Wall smooth and colourless.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, on bed of tiny pool (134).

192. **Closterium moniliferum** [(Bory) Ehrenberg, Die Infusionsthierchen als vollkommene Organismen, p. 91, Pl. V, fig. 16 (1838)].

Rather abundant in three collections. Cells 190-270µ long, 28-33µ broad. Wall smooth and colourless.

General Distribution. Europe, the Faeröe Islands, Iceland, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in slow, muddy streamlet (54).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in bed of stream (123), in bed of stream (25).

193. **Closterium parvulum** Nägeli, Gatt. einzell. Alg., p. 106, Pl. VI c, fig. 2 (1849).

This is the *Closterium* most frequently found in the present collections, usually occurring in considerable numbers.

General Distribution. Europe, Novaya Zemlya, Asia, Africa, Australia, North and South America, Greenland, northwestern Canada.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, scrapings from rock in freshwater lake (145).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum from slimy *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110), in running fresh water (111).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, from lake margin (75), in bed of freshwater stream (74).

194. **Closterium pusillum** Hantzsch, in Rabenhorst, Alg. Europ. No. 1008, (1861).[1]

var. **major** Raciborski, Pamietnika Wydz. Akad. Umiej. matem.-przy. Krakow, X, p. 63 (1885).

A few specimens of this were found in one collection. They were 90-100µ long, 15-17µ broad, and had smooth, colourless walls. The ends of the cells were broadly rounded. The terminal vacuoles contained 2-4 granules.

General Distribution. Great Britain, Poland, South America.[2]

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in freshwater stream (159).

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[1] It seems worthy of note that on the back of a sheet belonging to this series and issued in June 1861, Rabenhorst printed the following: "Berichtigung. Das von Herrn Hantzsch sub. No. 1008 als pupillum nov. sp. ausgegebene Closterium ist: *Cl. obtusatum* Bréb. Liste des Desmid. 1856 p. 154 T. II. F. 46." (N.P.)

[2] Var. *major* is apparently new to North America. (N.P.)

195. **Closterium ralfsii** [de Brébisson, in Jenner, Fl. Tunbridge Wells, p. X (1845)]. Ralfs, British Desmidieae, p. 174, Pl. XXX, fig. 2 (1848).

var. **hybridum** Rabenhorst, Kryptogamen Flora v. Sachsen I, p. 174 (1863).

Not uncommon in the two vials in which it occurred.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

196. **Closterium rostratum** [Ehrenberg, Entwick. Lebends. d. Infus., p. 67 (1832)].

Numerous specimens were found. Length 300-320μ, breadth 18-20μ. Wall a pale yellowish brown, with about 25 striæ visible across the cell.

General Distribution. Europe, Iceland, the Faeröe Islands, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater pool (76).

197. **Closterium striolatum**[1] [Ehrenberg, Entwick. Lebends. d. Infus., p. 68 (1832)].

Fairly abundant.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on damp mud (164).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wolstenholme,* Polunin Aug. 24, 1936, from bottom of pool (3).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater pool (76).

198. **Closterium toxon** W. West, Jour. Linn. Soc., Bot., XXIX, p. 121, Pl. XIX, fig. 14 (1892).

Three specimens of this *Closterium* were found in a vial in which desmids were plentiful and various. The cells were 190-240μ long and 10-11μ broad, and had smooth, colourless walls.

General Distribution. Europe, Newfoundland, the United States, Singapore.[2]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] *Closterium intermedium* Ralfs is mentioned by Dr. Linder (p. 244) as occurring in our area. It seems most probable that the present species is meant, as according to some authors *C. intermedium* is a mere phase of *C. striolatum* (*fide* Whelden *in litt.*). (N.P.) I determined as *C. intermedium* Ralfs that parasitized specimen I handed to Dr. Linder. As the study progressed it became evident that this was better treated as a small specimen of *C. striolatum* Ehrenberg—R. M. W., September 1946.

[2] Apparently new to Canada. (N.P.)

199. **Closterium venus** [Kütz., Phycologia german., p. 130 (1845)].

A common species in the localities in which it was found.

General Distribution. Europe, the Faeröe Islands, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, in fresh water (12), on mud (14).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on damp mud (164).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), also Polunin Aug. 27, 1936, in running water, drying up (136).

200. **Pleurotaenium ehrenbergii** [(Bréb.) de Bary, Dict. univ. hist. Nat., p. 93 (1844)].

Not really plentiful. Length of cell 420-440μ, breadth 35-40μ (at base of semicell). Cell-wall distinctly punctate. Five tubercles visible across apex of cell.

General Distribution. Europe, Novaya Zemlya, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on leaves of *Carex aquatilis* var. *stans* in a pool (126).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on bed of freshwater stream (74).

201. **Pleurotaenium trabecula** (Ehrenb.) Nägeli, Gatt. einzell. Alg., p. 104, Pl. VI, fig. a (1849).

Rare in this collection, only one specimen being found.

General Distribution. Europe, Iceland, Novaya Zemlya, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

202. **Pleurotaenium truncatum** (Bréb.) Nägeli, Gatt. einzell. Alg., p. 104 (1849).

This species was found in considerable numbers. The cells were 520-640μ long and 50-64μ broad (in widest part, at middle of semicell). Cell-wall punctate.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, New Zealand, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc. Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen, freshwater pool (64).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on bed of a freshwater stream (74), in a freshwater pool (76).

203. **Tetmemorus laevis** (Kütz.) Ralfs, British Desmidieae, p. 146, Pl. XXIV, fig. 3 (1848).

This species was of fairly common occurrence in the two vials in which it was found. Cells 83-85μ long and 26-27μ broad; breadth of isthmus 24·5μ.

General Distribution. Europe, Novaya Zemlya, Asia, New Zealand, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in running water, drying up (136), in seepage from wet rocks (141).

204. Euastrum ausatum Ralfs, British Desmidieae, p. 85, Pl. XIV, fig. 2 (1848).

A fairly common plant in the three localities in which it occurred.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936 (127).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

205. Euastrum bidentatum Nägeli, Gatt. einzell. Alg., p. 122, Pl. VII d, figs. 1 a-f (1849).

In the present collection this was one of the most frequent species of this well-represented genus, and was, moreover, abundant in each vial in which it was found.

General Distribution. Europe, Iceland, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen, freshwater pool (64).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin, July 29, 1936, scum on slimy *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), from margin of lake (119).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69), also Polunin Aug. 20, 1936, in freshwater lake (84).

206. Euastrum binale [(Turpin) Ehrenberg, Berlin Monatsber., p. 208 (1840)].

This species was present in several collections, but rarely in any great numbers.

General Distribution. Europe, Iceland, the Faeröe Islands, Novaya Zemlya, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on wet mud (159), on damp mud (164).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a small pool (61).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111).

var. **sectum** Turner, Freshwater Algae of East India, p. 81, Pl. X, figs. 35, 39, 47, and Pl. XI, fig. 5 (1893).

This form when present was found only in very small numbers.

General Distribution. Europe, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in ice in a frozen stream (46).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

var. **gutwinskii** Schmidle, Flor. Glon. Okolic Lwowa, p. 73, Pl. III, fig. 25 (1891).

This form was not infrequent in the collections in which it occurred.

General Distribution. Europe, Africa, North and South America, northwestern Canada.

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, on bed of freshwater stream (74).

207. **Euastrum didelta** [(Turpin) Ralfs, Ann. Mag. Nat. Hist., XIV, p. 190, Pl. VII, figs. 2 a-b (1844)].

This species was not very abundant in either collection in which it was found.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Aug. 9, 1936, on drying edge of freshwater pool (50).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42).

208. **Euastrum dubium** Nägeli, Gatt. einzell. Alg., p. 122, Pl. VII d, fig. 2 (1849).

Quite common in three collections.

General Distribution. Europe, Spitsbergen, Asia, Africa, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), in cold seepage from late-lying snow (93).

var. **snowdoniense** (Turner) W. & G. S. West, British Desmidiaceae II, p. 45, Pl. XXXVIII, fig. 11 (1905).

In the present material the three protuberances on the face were not present. Otherwise the specimens agreed very well with Turner's original figure. Length of cells 28μ, width 20μ; breadth of isthmus 7μ.

General Distribution. Wales.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a small pool (61).

209. **Euastrum elegans** [(Bréb.) Kütz., Phycologia german., p. 135 (1845)].

This was the most abundant *Euastrum* of the entire collection, being usually plentiful in each vial in which it was present.

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[1] Apparently new to the whole of America. (N.P.)

General Distribution. Europe, the Faeröe Islands, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, by the seashore (120), also Polunin July 27, 1936, in a tundra pool (140), also Polunin July 28, 1936, in seepage from wet rocks (141), also Polunin Aug. 27, 1936, in fresh water (116).

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97), from lakeside (104), scum on slimy *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), at margin of lake (119).

210. **Euastrum gemmatum** de Brébisson, in Ralfs, British Desmidieae, p. 87, Pl. XIV, fig. 4 (1848).

Only a very small number of individuals of this species were found.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116).

211. **Euastrum inerme** (Ralfs) Lundell, Desm. Suec., p. 20, Pl. II, fig. 3 (1871).

This species occurred in small numbers in one vial. The cells were 60-65μ long and 38-42μ broad; the breadth of the isthmus was 9-13μ.

General Distribution. Europe, the Faeröe Islands, North and South America.

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1, 1936, in seepage, drying up (121).

212. **Euastrum montanum** W. & G. S. West, Trans. Bot. Soc. Edinburgh, XXIII, p. 17, Pl. I, figs. 11-2 (1905).

This desmid showed some variation in form, many specimens having the lateral margins with three crenulations instead of two. *See* Plate VI, figure 1.

General Distribution. Europe, North America, Greenland.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

213. **Euastrum pectinatum** de Brébisson, in Ralfs, British Desmidieae, p. 86, Pl. XIV, figs. 5 a-b, d-f (1848).

Not uncommon when present. Found in vials in which other desmids were numerous.

General Distribution. Europe, Iceland, the Faeröe Islands, Africa, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] Apparently new to Canada. (N.P.)

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

var. **brachylobum** Wittrock, Bih. till K. Svenska Vet.-Akad. Handl., I, 1, p. 48, Pl. IV, fig. 5 (1872).

This variety was rare even in the one collection that contained it.

General Distribution. Northern Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16).

214. **Euastrum pinnatum** Ralfs, British Desmidieae, p. 81, Pl. XIII, fig. 1 (1848).

Found in a collection rich in desmids of various genera.

General Distribution. Europe, the Faeröe Islands, northern Africa, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

215. **Euastrum rostratum** [Ralfs, Ann. Mag. Nat. Hist., p. 192, Pl. VII, fig. 5 (1844)].

Evidently uncommon.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Asia, Africa, Australia, North America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93). Not abundant.

216. **Euastrum turneri** W. West, Jour. Linn. Soc., Bot., XXIX, p. 141, Pl. XX, fig. 18 (1892).

Several specimens of this Alga were found. They were 40-43μ long, 30-32μ broad, and had an isthmus 9μ broad. *See* Plate VI, figure 10.

General Distribution. Europe, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

217. **Euastrum verrucosum** [Ehrenberg, Abh. d. k. Akad. d. Wiss. Berlin, p. 247 (1833)].

Rather frequently found in the two vials in which it occurred.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

var. **reductum** Nordstedt, Lunds Univ. Årsskr., XVI, p. 9, Pl. I, fig. 14 (1880).

Infrequent.

General Distribution. Europe, Asia, North and South America.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84).

218. **Cosmarium abbreviatum** Raciborski, Pariet. Wydz. Akad. Umiej. matem.-przy. Krakow, X, p. 83, Pl. X, fig. 13 (1885).

var. **planctonicum** W. & G. S. West, Trans. Roy. Soc. Edinburgh, XLI, 3, p. 500 (1905).

A few specimens of this Alga were found. They were 28-30μ long, 28-29μ broad, and 10·5-12μ thick; the breadth of the isthmus was 7-7·5μ.

General Distribution.[1] The British Isles.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen, freshwater pool (64).

219. **Cosmarium anceps** Lundell, De Desmidiaceis Suec., p. 48, Pl. III, fig. 4 (1871).

Not found in abundance. Length of cells 24-32μ, breadth 16-18μ, thickness 12·5μ; breadth of isthmus 9-12μ.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, North America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
8. N. Quebec: *Wakeham Bay,* July 29, 1936, in cold seepage from late-lying snow (93).

220. **Cosmarium angulosum** de Brébisson, Liste des Desmidiées, p. 127, Pl. I, fig. 17 (1856).

Found in small numbers in a collection rich in desmids. Length of cells 23-24μ, breadth 15-16μ, thickness 9μ; breadth of isthmus 5μ.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

221. **Cosmarium annulatum** (Nägeli) de Bary, Untersuchungen über die Familie der Conjugaten, pp. 46, 72 (1858).

This very distinct species was found in small numbers. The two pyrenoids were in some cases placed longitudinally rather than transversely. The cells were 45-47μ long, 21-21·5μ in diameter, and had an isthmus 20μ broad.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, North and South America, Greenland.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

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[1] I.e., as regards the variety, which is apparently new to the whole of America. (N.P.)

222. **Cosmarium arctoum** Nordstedt, Desmid. Arctoae, p. 28, Pl. VII, fig. 22 (1875).

This little desmid was of infrequent occurrence in three collections. The cells were 16μ long, 12-13μ broad, and 11-11·5μ thick; the isthmus was 10μ broad. The smooth cell-wall was colourless, except in one collection (97), where it was faintly straw-coloured. *See* Plate VI, figure 3.

General Distribution. Europe, Novaya Zemlya, Spitsbergen, New Zealand, Greenland.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a slow, muddy streamlet (54).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

223. **Cosmarium baffinensis** *n. sp.*

This small desmid was found infrequently in material scraped from a rock and containing a few other Algae. In front view the cells were very slightly longer than wide. They were deeply constricted, with a narrowly linear sinus. The semicells were faintly hexagonal, with broadly rounded angles. In side view the semicells were subcircular, in vertical view broadly oval to subrectangular with broadly rounded angles. The cell-wall was colourless, and smooth except for a single minute granule in the centre of the face of each semicell.

Length of cells 19-20μ, breadth 18-19μ, thickness 9-10μ; breadth of isthmus 5-6μ.

Parvum, paullo longius quam latius, profunde constrictum, sinu lineari. Semicellulis subhexagoniis, angulis rotundatis; a latere visis subcircularibus; a vertice visis ovalis vel subrectangularibus. Membrana glabra cum granulo minuto singulo.

Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in scrapings from rock in a freshwater lake (146).

Type. See Plate VI, figure 2.

224. **Cosmarium bioculatum** de Brébisson, in Ralfs, British Desmidieae, p. 95, Pl. XV, fig. 5 (1848).

This desmid occurred in a variety of habitats. The cells varied from 14-21μ in length, from 14-20μ in breadth, and from 7-9μ in thickness. The isthmus was 6-9μ broad.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, Africa, North America, Greenland.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on moss in a swift stream (147), among brown filamentous Algae (*Zygnema* sp.) (151).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, in stagnant seepage (117).

var. **hians** W. & G. S. West, Jour. Roy. Micros. Soc., p. 486, Pl. VI, fig. 24 (1897).

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[1] Apparently new to Canada. (N.P.)

This variety was found in small numbers. The cells were about 18μ long, 16μ broad, and 8μ thick; isthmus 4μ in breadth. The cell-wall was distinctly punctate and colourless.

General Distribution. England.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, on lake bottom (118).

225. **Cosmarium biretum** de Brébisson, in Ralfs, British Desmidieae, p. 102, Pl. XVI, fig. 5 (1848).

Not abundant. Length of cells about 70μ, breadth 60μ, thickness 40μ; breadth of isthmus 22μ.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, New Zealand, North America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74), in freshwater lake (84).

226. **Cosmarium blyttii** Wille, Norges Ferskr. Alg., p. 25, Pl. I, fig. 7 (1880).

Specimens of this small desmid were only found rarely, in a single vial. They were 18-20μ long, 15-17μ broad, and 10·5-11μ thick; the isthmus was 5μ in breadth.

General Distribution. Europe, Asia, Africa, New Zealand, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

227. **Cosmarium botrytis** [Meneghini, Linnaea, XIV, p. 220 (1840)].

This ubiquitous desmid was found in considerable numbers in many different vials.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936 (48), in small, frozen, freshwater pool (64).
3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, at drying edge of freshwater pool (50), on stems of *Carex* in a shallow stream (55), on mud (14).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16), also Polunin July 27, 1936, at side of large lake (115), in a tundra pool (140), also Polunin Aug. 27, 1936, on boulder in swift freshwater stream (15), in fresh water (116), in fast freshwater stream (59); *Cape Dorset,* Polunin Aug. 25, 1936, in floating masses of Algae (132).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in stream bed (123), date? in stream bed (25).

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[1] Apparently new to the whole of America. (N.P.)

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97), from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), from margin of lake (119).

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, on bed of freshwater stream (74), in freshwater lake (84), in tiny freshwater pool (92).

var. **mediolaeve** W. West, Jour. Linn. Soc., Bot., p. 155, Pl. XXI, fig. 12 (1892).

This variety occurred in one collection with the typical form. The cells were 65-67μ long, 55-58μ broad, and 25-26μ thick; the breadth of the isthmus was 15·5μ.

General Distribution. Europe.[1]

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin date?—in stream bed (25).

Cosmarium coarctatum W. West, Jour. Roy. Micros. Soc., p. 724, Pl. IX, fig. 11 (1892).

Several specimens of this small species were found. *See* Plate VI, figure 4.

General Distribution. England.[1]

Found only *outside our area,* to the southwest, but deemed worthy of mention as an addition to the flora of the New World.

W. COAST HUDSON BAY: *Churchill,* lat. 58° 46′ N., Polunin Aug. 16, 1936, in a small, stagnant, freshwater pool (90).

228. **Cosmarium conspersum** Ralfs, British Desmidieae, p. 101, Pl. XVI, fig. 4 (1848).

This species was fairly abundant where it occurred. In one collection from a lake at Chesterfield (No. 84), there was a small form with cells 62-64μ long, 45-48μ broad, and 35μ thick, with the isthmus 16μ broad. This was

f. **minor** Borge, Bih. till K. Sv. Vet.-Akad. Handl., XVII, Afd. III, No. 4, p. 9 (1892).

General Distribution. Europe, Iceland, Novaya Zemlya, North and South America, Greenland, northwestern Canada.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in lake (23), on bed of freshwater stream (74), in a freshwater lake (84) including f. *minor.*

var. **latum** (Bréb.) W. & G. S. West, British Desmidiaceae IV, p. 15, Pl. XCIX, figs. 5-6 (1912).

Length of cell 95-100μ, breadth 75-80μ, thickness 40-42μ; breadth of isthmus 26-29μ.

General Distribution. Europe, the Faeröe Islands, Asia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] Apparently new to the whole of America. (N.P.)

229. **Cosmarium costatum** Nordstedt, Desmid. Arctoae, p. 25, Pl. VII, fig. 17 (1875).

Many of the tundra pool specimens belonged to f. *major* Boldt, with cells 45-48μ long, 37-39μ broad (breadth of isthmus 18-19μ), and 28μ thick.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, North America, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

230. **Cosmarium crenatum** [Ralfs, Ann. Mag. Nat. Hist., p. 394, Pl. XI, fig. 6 (1844)].

This widespread species was not at all common in the collections in which it was seen. In vial 92 there was found a small desmid that seemed in every particular but size to belong to the present species; it is accordingly included here. The length of the cells was 22-24μ, breadth 15-16μ, and thickness 10μ; the isthmus was 6·5μ in diameter.

General Distribution. Europe, Iceland, Spitsbergen, the Faeröe Islands, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84), in a tiny freshwater pool (92).

f. **boldtiana** (Gutw.) W. & G. S. West, British Desmidiaceae IV, p. 37, Pl. XCVIII, figs. 13-4 (1912).

Rarely found in this collection.

General Distribution. Scotland, Austria, Sumatra.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in stream bed (123).

231. **Cosmarium cucumis** (Corda) Ralfs, British Desmidieae, p. 93, Pl. XV, fig. 2 (1848).

This desmid was rare in the present collection.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on moss in swift freshwater stream (147).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant water (42).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

232. **Cosmarium cucurbita** [de Brébisson, in Desmazières, Pl. Crypt. France XXIII, No. 1103 (1841)].

Not abundant in any collection.

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[1] Apparently new to the whole of America. (N.P.)

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a freshwater pool (18).
8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

233. **Cosmarium cucurbitinum** (Biss.) Lütkemüller, Zur kennt. Desm. Böhmens, p. 487 (1910).

Penium cucurbitinum Biss.

Never present in abundance. Length of cells 68-75μ; breadth 28-34μ.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

234. **Cosmarium curtum** (Bréb.) Ralfs, British Desmidieae, p. 109, Pl. XXXII, fig. 9 (1848).

Penium curtum Bréb.

This species was found quite abundantly in the Far North.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, Africa, North America, Greenland.

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 5-6, 1936, in fresh water (30).
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in dried-up bed of freshwater pool (43).
3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a slow, muddy streamlet (54).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on sandy bottom of dried-up streamlet (145).

235. **Cosmarium cyclicum** Lundell, De Desmidiaceis Suec., p. 35, Pl. III, fig. 6 (1871).

var. **arcticum** Nordstedt, Desmid. Spetsb., p. 31, Pl. VI, fig. 13 (1872).

In one tundra pool at Port Burwell there were found desmids of many kinds, including the present variety, which occurred in considerable numbers and showed great variation in the nature of the surface granulation, and in the shape of the cell in surface view. The dimensions were: length 68-70μ, breadth 68-70μ, thickness 32-34μ; breadth of isthmus 21-23μ. Two of these cells are figured in Plate V, figure 7.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

var. **nordstedtianum** (Reinsch) W. & G. S. West, British Desmidiaceae II, p. 146, Pl. LVIII, fig. 12 (1905).

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[1] Apparently new to the whole of America. (N.P.)

Not uncommon in northern Quebec. Length of cells 65-70μ, breadth 65-70μ, thickness 35-36μ; breadth of isthmus 23-25μ.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Greenland.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 30, 1936, in late-snow stream and seepage (105); *Wolstenholme,* Polunin Aug. 1, 1936, in cold seepage (93).

var. **crassum** *n. var.*

Semicellulis a vertice visis ovalibus, a latere visis circularibus. Cell. long. 70-75μ, lat. 75-80μ, lat. isth. 28-30μ, crass. 38-40μ.

Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, on sandy bottom of dried-up streamlet (145).

Type. See Plate V, figure 8.

236. **Cosmarium cymatopleurum** Nordstedt, Desmid. Spetsb., p. 28, Pl. VI, fig. 4 (1872).

Not many specimens of this were found. Length 84μ, breadth 66μ, thickness 41μ, breadth of isthmus 26μ. *See* Plate VIII, figure 4.

General Distribution. Europe, Spitsbergen, Novaya Zemlya.[2]

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

237. **Cosmarium debaryi** Archer, in Pritchard, History of Infusoria, p. 735 (1861).

This desmid was not abundant. The cells were 105-123μ long, 52-60μ broad, and 48-54μ thick, with the isthmus 35-40μ in breadth. The cell-wall was minutely but distinctly punctate.

General Distribution. Europe, Novaya Zemlya, North and South America, Spitsbergen.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93), also Polunin July 30, 1936, in seepage and stream from late-lying snow (105).

238. **Cosmarium depressum** (Nägeli) Lundell, De Desmidiaceis Suec., p. 38 (1871).

var. **achondrum** (Boldt) W. & G. S. West, Trans. Roy. Soc. Edinburgh, XLI, p. 484 (1905).

The plants of this species were not abundant. They were small, being 24-30μ long, 23-28μ broad, and 10-12μ thick, with an isthmus 11-14μ broad. One of the smallest specimens is illustrated on Plate III, figure 10.

General Distribution. Europe, Iceland, Spitsbergen, the Faeröe Islands, North and South America.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23).

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

239. **Cosmarium furcatospermum** W. & G. S. West, Jour. Roy. Micros. Soc., p. 7, Pl. I, fig. 13 (1894).

Very few cells were found. Length 22·5μ, breadth 20μ, thickness 11μ; breadth of isthmus 8μ.

General Distribution. The British Isles.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in a stagnant freshwater pool (42).

240. **Cosmarium granatum** de Brébisson, in Ralfs, British Desmidieae, p. 96, Pl. XXXII, fig. 6 (1848).

This desmid was found in large numbers in many collections.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from drying edge of freshwater pool (50).

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), on lake bottom (118), also Polunin July 27, 1936, from a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116); *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves in fresh water (37).

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107), also Polunin July 30, 1936, in seepage and stream from late-lying snow (105).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, in a lake (23), from bed of freshwater stream (74), from freshwater lake (84), in a tiny freshwater pool (92).

var. **subgranatum** Nordstedt, Algae aquae dulcis et Characeis Sandvic., p. 13, Pl. II, fig. 8 (1878).

Not uncommon. Cells 28-32μ long, 21-23μ broad, and 14-14·5μ thick; isthmus 8μ broad.

General Distribution. Europe, New Zealand, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, on submerged weeds in lake (60).

241. **Cosmarium hammeri** Reinsch, De Speciebus Generibusque Alg. et Fung., p. 115, Pl. XXII, figs. B I, 1-10 (1867).

Very few specimens found. Length of cell 45-50μ, breadth 30-35μ, thickness 17-19μ; breadth of isthmus 12-13μ.

General Distribution. Europe, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

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[1] Apparently new to the whole of America. (N.P.)

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

var. **protuberans** W. & G. S. West, Trans. Linn. Soc., Bot., ser. 2, V, p. 246, Pl. XIV, fig. 35 (1896).

Of infrequent occurrence. Length of cells 30-32μ, breadth 19-19·5μ, thickness 12μ; breadth of isthmus 7μ.

General Distribution. The British Isles, North America.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a small pool (61).

242. **Cosmarium holmiense** Lundell, De Desmid. Suec., p. 49, Pl. II, fig. 20 (1871).

This species was found in abundance in several collections. *See* Plate V, figure 10.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, North and South America, New Zealand, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on dried-up bed of freshwater pool (43).
3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from the drying edge of a freshwater pool (50).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), also Polunin Aug. 27, 1936, from edge of lake (16).

var. **integrum** Lundell, De Desmid. Suec., p. 49 (1871).

This variety was found in even larger numbers than the typical form. It offered a wide variation in size, ranging from a small specimen 40μ long, 22μ broad, and 23μ thick, with an isthmus 17μ broad, to a large one 70μ long, 42μ broad, and 30μ thick, with the isthmus 23μ broad.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, North America, northwestern Canada.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a freshwater stream (144).
3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (15), on stems of *Carex* in shallow stream (55), (137).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), on stones in stream (112).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93), also Polunin July 30, 1936, in cold stream from late-lying snow (105); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), in stagnating seepage (117).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

243. **Cosmarium holmii** Wille, Alger fra Novaia Zemlia og Kara-Havet, p. 84, Pl. XIII, fig. 2 (1885).

This desmid was found in considerable numbers in one collection. When viewed from the end, none of the cells gave any indication of the pronounced angular aspect that led Lowe (1923, p. 29 A) to place the species in the genus *Staurastrum.* The cells were 65-70µ long, 50-55µ broad, and 30-35µ thick. They had an isthmus 20-23µ broad. *See* Plate V, figure 5.

General Distribution. Northwestern Canada (as *Staurastrum holmii* (Wille) Lowe), Novaya Zemlya.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69).

244. **Cosmarium humile** (Gay) Nordstedt, in De Toni, Sylloge Algarum I-II, p. 965 (1889).

Uncommon in the present collections.

General Distribution. Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* July 27, 1936, in a tundra pool (140).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74).

var. **glabrum** Gutwinski, Nuova Notarisia, III, p. 21 (1892).

Occurred in two collections rich in specimens of other desmids.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69).

var. **striatum** (Boldt) Schmidle, Beiträge zur alpinen Algenflora, p. 389 (1895).

Rather frequently found in its one collection. The cells were 15µ long, 14µ broad, and 10-11µ thick, with an isthmus 5µ broad.

General Distribution. Europe, the Faeröe Islands, Asia, North and South America, northwestern Canada.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23).

245. **Cosmarium impressulum** Elfving, Acta Soc. pro Fauna et Flora Fennica, 11, 2, p. 13, Pl. I, fig. 9 (1881).

The cells were 20-25µ long, 17-20µ broad, and 10-11µ thick; the isthmus was 5-6µ in breadth.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

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[1] Apparently new to the whole of America. (N.P.)

246. **Cosmarium inconspicuum** W. & G. S. West, Jour. Roy. Micros. Soc., p. 154, Pl. IV, fig. 45 (1896).

Not found in abundance, but quite distinct. Length of cells 14μ, breadth 12μ, thickness 7μ; breadth of isthmus 6μ.

General Distribution. The British Isles, northwestern Canada.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42).

247. **Cosmarium isthmium** W. West, Jour. Roy. Micros. Soc., p. 290, Pl. V, fig. 19 (1890).

In vial No. 42 this species was found in large numbers. An illustration will be found on Plate VI, figure 9.

General Distribution. Europe, the United States.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

248. **Cosmarium kjellmani** Wille, Ofv. K. Vet. Akad. Förh. Stockholm, XXXVI, 5, p. 42, Pl. XII, fig. 31 (1879).

Only a few desmids were found in the vial in which this occurred. The specimens were 28μ long, 28μ broad, and 17μ thick, the isthmus being 8μ in breadth.

General Distribution. Europe, Novaya Zemlya, Asia (Siberia), Greenland.[1]

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a slightly brackish lagoon (88).

249. **Cosmarium laeve** Rabenhorst, Flora Europ. Alg. III, p. 161 (1868).

Very few individuals of this species were found.

General Distribution. Europe, the Faeröe Islands, Novaya Zemlya, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a fresh-water stream (144).

Cosmarium medioplanum **n. sp.**

Only a few cells of this undescribed form were found, at Churchill, which lies outside our area on the west coast of Hudson Bay. They were small and either subcircular or obscurely octagonal, deeply constricted with a narrowly linear sinus. In face view the semicells were subreniform to obscurely hexagonal, in lateral view subspherical, in vertical view elliptical. The lateral portions of the cell-wall showed many minute granules, usually irregularly arranged. The medial portion of the cell was entirely smooth. The cells were 38-42μ long, 33-38μ broad, and 16-18μ thick. The isthmus was 14-15μ in breadth. A single semicell is shown on Plate VI, figure 6.

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[1] Apparently new to Canada. (N.P.)

Parvum, subcirculare vel octogone, profunde constrictum, sinu lineari; semicellulis a fronte visis subreniformis vel subhexagoniis; a latere visis subcircularis, a vertice visis ellipticis. Membrana partibus lateralibus granulis minutis ornata, media glabra.

Occurrence.

W. Coast Hudson Bay: *Churchill,* lat. 58° 46′ N., Polunin Aug. 16, 1936, in a small, stagnant, freshwater pool (90).

Type. See Plate VI, figure 6.

250. **Cosmarium meneghinii** de Brébisson, in Ralfs, British Desmidieae, p. 96, Pl. XV, fig. 6 (1848).

This species was fairly abundant. The cells were 20-25μ long, 16-18μ broad, and 10-11μ thick. The isthmus was 6-6·5μ broad.

General Distribution. Europe, the Faeröe Islands, Iceland, Novaya Zemlya, Asia, Africa, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on *Carex* stems in shallow stream (55).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, on leaves of *Carex aquatilis* var. *stans* in pool (126).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in stream bed (123).

251. **Cosmarium notabile** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, IV, p. 129, Pl. I, fig. 15 (1856).

Not abundant. The length of the cells was 30-37·5μ, the breadth 23-26μ, and the thickness 15-17·5μ. The breadth of the isthmus was 15-16·5μ.

General Distribution. Europe, Novaya Zemlya, Africa, North America, Greenland.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin date? 1936, in stream bed (25).

252. **Cosmarium obtusatum** Schmidle, Engler's Bot. Jahrb., XXVI, p. 38 (1898).

Found in abundance in one collection. Length of cells 55-58μ, breadth 48-50μ, thickness 21-22μ; breadth of isthmus 16μ.

General Distribution. Europe, Africa.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in seepage over cliff (22).

253. **Cosmarium ochthodes** Nordstedt, Desmidieae Arctoae, p. 17, Pl. VI, fig. 3 (1875).

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, North America, Greenland.

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[1] Apparently new to the whole of America. (N.P.)

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

254. **Cosmarium parvulum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, IV, p. 133, Pl. I, fig. 18 (1856).

This species, abundant where found, showed great diversity of form. Several phases are illustrated on Plate V, figure 1.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, North and South America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on *Carex* stems in shallow stream (55).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in seepage from quartzite cliff (133).

255. **Cosmarium paucigranulatum** *n. sp.*

A small species found in abundance on moss. The cells were slightly longer than broad, rather deeply constricted, and with a narrowly linear sinus. The semicells were somewhat reniform, the basal angles broadly rounded and the apex similarly shaped. The cell-wall was granulate, the granules being irregularly and rather remotely scattered, and uniform in size. It was often difficult to observe them in face view, and they tended to be sparse or wanting on the lower half of the semicell. About 18 slight crenulations were visible around the margin of the semicell. In vertical view the whole was elliptic, with the ratio of the axes about 1:1·6.

Length of cell 28-30μ, breadth 25-26μ, thickness 15-16μ; breadth of isthmus 10-12μ.

Parvum, paullo longius quam latius, medio profunde constrictum, sinu lineari. Semicellulis subreniformibus, margine 18-crenatis, angulis inferioribus rotundatis, apice rotundato, a vertice visis oblongis. Membrana granulata, granulis sparsis, base sparsissimis.

Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on moss in a swift freshwater stream (147).

Type. See Plate V, figure 4.

256. **Cosmarium phaseolus** [de Brébisson, in Meneghini, Linnaea, XIV, p. 220 (1840)].

This was not abundant in any of the collections.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Asia, Africa, Australia, North America, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on *Carex* stalks (6), floating (7), also Polunin Sept. 10, 1936, on submerged weeds in lake (60).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116).

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, from margin of lake (119).

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, on bed of freshwater stream (74), on bottom of slightly brackish lagoon (78).

257. **Cosmarium plicatum** Reinsch, De Speciebus generibusque Alg. et Fung., p. 114, Pl. XXII, figs. C II, 1-10 (1867).

Very infrequent. Length of cells 60μ, breadth 34μ, thickness 22μ; breadth of isthmus 18μ.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 28, 1936, in seepage over rocks (141), also Polunin Aug. 27, 1936, in fresh water (29).

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

var. **hibernicum** W. West, Jour. Linn. Soc., Bot., XXIX, p. 142, Pl. XXIV, fig. 9 (1892).

Found in small numbers. Length of cells 90μ, breadth 52μ; breadth of isthmus 23μ. *See* Plate VIII, figure 7.

General Distribution. Europe.[1]

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936 (48).

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936 (137).

258. **Cosmarium poluninii** *n. sp.*

This desmid occurred in only one collection. A single plant showed a variety of aspects as it was turned from one position to another. In face view the cell is truncate-pyramidate, rather deeply constricted, and with a narrowly linear sinus. The basal angles are rectangular, the lateral edges are straight or slightly convex and marked by a series of five crenulations. The truncated apex has a shallow median depression. The face of the semicell is marked by three protuberances, which are often very inconspicuous and easily overlooked. The side view is rectangular or slightly broader at the apex, and shows 4-5 paired transverse ridges, each with 4-5 granules. In side view the apical margin is slightly convex. The end view is broadly elliptical, with a subrectangular polar region, the sides of which have a five-crenulate central part. The cell-wall is smooth and colourless.

Length of cells 45-50μ, breadth 38-40μ, and thickness 28-30μ; breadth of isthmus 20μ.

Mediocre, paullo longius quam latum, profunde constrictum, sinu lineari. Semicellulis truncato-pyramidatis, angulis basalibus rectangularibus, marginibus lateralibus rectis vel leniter convexis, 5-crenulatis, apicibus medio depressis; a latere visis rectangularibus vel obcuneatis, 4-5 rugis aequalibus transversalibus ornatis, quaque ruga granulis 4-5; a vertice visis ellipticis, regione polari subrectangulari, lateribus longioribus in mediis dilatatis, 5-crenulatis. Membrana achroa, glabra.

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[1] Apparently new to the whole of America. (N.P.)

Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in scrapings from rocks in freshwater lake (145).

Type. See Plate V, figure 9.

259. **Cosmarium polygonum** (Nägeli) Archer, in Pritchard, History of Infusoria, p. 732 (1861).

Rare in the one collection in which it occurred, only three specimens being found.

General Distribution. Europe, Asia, Africa, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

260. **Cosmarium porkornyanum** (Grun.) W. & G. S. West, Jour. Bot., XXXVIII, p. 292 (1900).

This occurred in considerable abundance in three vials. The cells were 27-33μ long, 18-20μ broad, and 11-14μ thick, with the isthmus 10μ broad. *See* Plate V, figure 6.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, Asia, North America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936 (48), in a small, frozen, freshwater pool (64).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a freshwater lake (84).

261. **Cosmarium praemorsum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 128, Pl. I, fig. 8 (1856).

Rare, only two specimens being found. Length of cells 52μ, breadth 45μ, thickness 30μ; breadth of isthmus 13μ.

General Distribution. Europe, the Faeröe Islands, Africa.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

262. **Cosmarium pseudopyramidatum** Lundell, De Desmid. Suec., p. 41, Pl. II, fig. 18 (1871).

This was found in very small numbers in a vial containing material rich in desmids.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] Apparently new to the whole of America. (N.P.)

263. **Cosmarium punctulatum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 129, Pl. I, fig. 16 (1856).

A very common species, found in abundance in several vials.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on *Carex* stems in shallow stream (55).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, in a lake (23).

264. **Cosmarium pycnochondrum** Nordstedt, Desmidieae Arctoae, p. 23, Pl. VI, fig. 14 (1875).

This was found in small numbers, mixed with many other species of desmids.

General Distribution. Spitsbergen, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

265. **Cosmarium pyramidatum** de Brébisson, in Ralfs, British Desmidieae, p. 94, Pl. XV, figs. 4 a-c (1848).

Very few plants of this species were found. They were 68-70μ long, 45-50μ broad, and 27μ thick, with the isthmus 20μ in breadth.

General Distribution. Europe, Asia, Africa, North and South America.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in bed of a stream (123).

266. **Cosmarium quadratum** [Ralfs, Ann. Mag. Nat. Hist., p. 395, Pl. XI, fig. 9 (1844)].

This species was not found in abundance. The cells were 55-62μ long, 33-35μ broad, and 26μ thick. The isthmus was 18-20μ in breadth.

General Distribution. Europe, the Faeröe Islands, Iceland, Spitsbergen, Novaya Zemlya, Asia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from drying edge of freshwater pool (50).
5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves (37).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

f. **willei** W. & G. S. West, British Desmidiaceae III, p. 59, Pl. LXXXVII, figs. 21-2 (1908).

The number and variety of desmids in the vial in which this occurred were most striking, although only three specimens of this particular form were found. *See* Plate III, figure 3.

General Distribution. Greenland, Novaya Zemlya, Northern Russia, and Siberia.[1]

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on the sheath of a colonial animal (69).

267. **Cosmarium ralfsii** de Brébisson, in Ralfs, British Desmidieae, p. 93, Pl. XV, fig. 3 (1848).

This species was never abundant, although it occurred in quite a lot of collections.

General Distribution. Europe, North America.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on dried-up bed of freshwater pool (43).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), also Polunin Aug. 27, 1936, in fresh water (116).
7. N. Labrador: *Burwell,* Polunin date ? 1936, in stream bed (25).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93), from lakeside (104), in scum on slimy *Carex* (107).

var. **montanum** Raciborski, Pamiet. Wydz. Akad. Umiej. matem.-przy. Krakow, X, p. 71, Pl. X, fig. 4 (1885).

This variety occurred with the species, though not at all abundantly. The cells tended to be much smaller than is usual for this variety, being 80-88μ long, 65-70μ broad, and 32-35μ thick. The isthmus was 22-23μ in breadth and the wall finely punctate. *See* Plate VIII, figure 9.

General Distribution. Europe (Austria, Poland).[2]

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

268. **Cosmarium rectangulare** Grunow, in Rabenhorst, Flora Europ. Alg. III, p. 166 (1868).

Very few specimens of this desmid were found.

General Distribution. Europe, Asia, Africa, North America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8, 1936, on *Carex* stalks (6), in floating masses of Algae (7).

269. **Cosmarium regnesi** Reinsch, De speciebus generibusque Alg. et Fung., p. 116, Pl. XXII, figs. A III, 1-5 (1867).

A few specimens of this desmid were found mingled with many others.

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

270. **Cosmarium reinschii** Archer, Quart. Jour. Micros. Sci., n.s. VI, p. 109 (1876).

Very rarely found in this collection.

General Distribution. Europe, Asia, Australia, North America.

E. Arctic Occurrence.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

271. **Cosmarium reniforme** (Ralfs) Archer, Jour. Bot., n.s. III, p. 92 (1874).

Not found in abundance.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8, 1936, on *Carex* stalks (6), in floating masses of Algae (7).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84).

272. **Cosmarium sexangulare** Lundell, De Desmid. Suec., p. 35, Pl. II, fig. 23 (1871).

In one vial several desmids were found that seemed to belong to this species, although much smaller than usual. They were 30-32μ long, 25μ broad, had an isthmus 10-12μ broad, and were 15μ thick. One of these plants is illustrated on Plate VIII, figure 5.

General Distribution. Europe, Asia, Africa, Australia, North America.

E. Arctic Occurrence.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, flocculent mass in freshwater stream (73).

f. **minima** Nordstedt, Bot. Not., p. 162 (1887).

Very few specimens were found.

General Distribution. Europe, Africa, Australia, South America.[1]

E. Arctic Occurrence.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16).

273. **Cosmarium speciosum** Lundell, De Desmid. Suec., p. 34, Pl. III, fig. 5 (1871).

This was fairly common in the several places in which it occurred.

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[1] Apparently new to North America. (N.P.)

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen, freshwater pool (64).
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, in bed of tiny pool (134); *Arctic Bay,* Polunin Sept. 1936, in fresh water (12).
7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in bed of stream (123).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93), also Polunin July 30, 1936, in seepage from late-lying snow (105).

var. **simplex** Nordstedt, Desmid. Spetsb., p. 31, Pl. VI, fig. 12 (1872).

Very rarely found in the collections in which it occurred. Length of cells 43-46μ, breadth 30-32μ, thickness 20-22μ; breadth of isthmus 14-15μ.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, New Zealand, the Hawaiian Islands, Greenland.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, in a pool, drying up (125).

274. **Cosmarium subarctoum** (Lagerheim) Raciborski, Desmidyja Ciastonia, p. 385, Pl. VI, fig. 24 (1892).

Not uncommon in two places. Length of cells 20-21μ, breadth 16-18μ, thickness 10μ; breadth of isthmus 9μ.

General Distribution. Europe, Australia, South America, Greenland.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 22, 1936, slimy Alga on lake bottom (5).

275. **Cosmarium subcostatum** Nordstedt, in Nordstedt & Wittrock, Öfv. K. Vet. Akad. Förh. Stockholm, No. 6, p. 37, Pl. XII, fig. 13 (1876).

Only a small number of examples of this desmid were found.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, North America, northwestern Canada, Greenland.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

276. **Cosmarium subcrenatum** Hantzsch, in Rabenhorst, Die Algen Sachsens, No. 1213 (1861).

This desmid appears to be of widespread occurrence in the region covered by the present expedition. Usually it is present in fairly large numbers.

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[1] Apparently new to Canada. (N.P.)

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, in a slow, muddy streamlet (54), in the bed of a tiny pool (134); *Arctic Bay,* Polunin Sept. 9?, 1936, on *Carex* stalks, on lake bottom (1), also Polunin Sept. 10, 1936, on submerged weeds in a lake (60).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, soft jelly on rocks (146), on wet mud (159), on damp mud (164).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16), also Polunin July 27, 1936, in a tundra pool (140), also Polunin July 28, 1936, in seepage from wet rocks (141), also Polunin Aug. 27, 1936, in seepage from quartzite cliff (133).
7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, deposit in lake (97), from lakeside (104), in scum on slimy *Carex* (107), also Polunin July 30, 1936, seepage from late-melting snow (105); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110), in running fresh water (111).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23), on bed of freshwater stream (74).

277. **Cosmarium subcucumis** Schmidle, Bei. d. Natur. de Gesell. zu Freiburg i. B., VII, I, p. 98, Pl. IV, figs. 20-2 (1893).

Very rare in this collection, only two specimens being found.

General Distribution. Europe, northwestern Canada.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay*: Polunin Sept. 9, 1936, on mud (14).

278. **Cosmarium subexcavatum** W. & G. S. West, Jour. Bot., XXXVIII, p. 293 (1900).

var. **ordinatum** W. & G. S. West, Jour. Bot., XXXVIII, p. 293, Pl. CDXII, fig. 3 (1900).

Several specimens of this variety were found. *See* Plate VIII, figure 6.

General Distribution. England, Switzerland, northwestern Canada.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).

279. **Cosmarium subhieronymusii** *n. sp.*

Several specimens of this desmid were found. They were rather below medium size for the genus, and deeply constricted, with a narrowly linear sinus. In front view the semicells were truncate-pyramidate, with the lateral margins straight or sometimes slightly convex, and with 4-5 crenulations. The apical margin was straight, and showed 4-6 prominent crenulations. When the cell was slightly tilted, these were seen to form part of a crown of 6-8 large hemispherical granules. In lateral view the semicell was subrectangular. In vertical view the cells were subelliptic, the ends being truncated and 4-granulate. In the centre (vertical view) was a circular crown of 6-8 granules. The cell-wall was smooth.

Length 50-55μ, breadth 40-42μ, thickness 24-27μ; breadth of isthmus 20-24μ.

Mediocre vel subparvum, profunde constrictum, sinu lineari. Semicellulis a fronte visis truncato-pyramidatis, marginibus lateralibus rectis vel leniter convexis, 5-6 crenatis; apicibus rectis, 4-6 crenatis. A latere visis subrectangularibus, a vertice subellipticis, apicibus 4-crenatis. Medio (a vertice visis) corona 6-8 granulis magnis.

Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in deposit in lake (97).

Type. See Plate V, figure 11.

280. **Cosmarium subquadratum** Nordstedt, in Nordstedt & Wittrock, Öfv. K. Vet. Akad. Förh. Stockholm, No. 6, p. 32, Pl. XII, fig. 7 (1876).

Three specimens of this desmid were found. They were 58-60μ long, 30-33μ broad, and had the isthmus 24μ in breadth.

General Distribution. Europe, South America.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, in stagnating fresh water (42).

281. **Cosmarium subtumidum** Nordstedt, in Wittrock & Nordstedt, Algae Exsiccatae, No. 172 (1872).

Only three specimens of this were found, in collections from two localities.

General Distribution. Europe, Asia, Africa, Australia, North and South America.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, on lake bottom (118).

282. **Cosmarium subundulatum** Wille, Christiania Vidensk.-selsk. Forhandl., I, p. 27, Pl. I, fig. 9 (1880).

Several specimens that occurred in one vial seem best considered here. They had a very conspicuous bulge in the face and were 60-74μ long, 40-45μ broad, and 25-28μ thick, with the isthmus 15-16μ broad. *See* Plate III, figure 7.

General Distribution. Europe, North America, Greenland.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

283. **Cosmarium tetragonum** (Nägeli) Archer, in Pritchard, History of Infusoria, p. 732 (1861).

A very few specimens of this desmid were found in two collections from Arctic Bay.

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[1] **Apparently new to Canada. (N.P.)**

General Distribution. Europe, Greenland.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8, 1936, on *Carex* stalks (6), in floating masses of Algae (7).

284. **Cosmarium tinctum** Ralfs, British Desmidieae, p. 95, Pl. XXXII, fig. 7 (1848).

Many specimens of this desmid were found in one vial.

General Distribution. Europe, Novaya Zemlya, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

285. **Cosmarium triselionatum** *n. sp.*

This small desmid was found infrequently in a vial containing a very sparse amount of algal material. The cells in front view are broadly elliptical and deeply constricted, with a narrowly linear sinus. The semicells are rounded-pyramidate, with the basal angles broadly rounded. In vertical view the whole is elliptical, with the ratio of the axes 1:1·5, and shows three low crenulations in the centre of each face. In face view these crenulations appear as three short, faintly discernible ridges. The cell-wall is smooth.

Length of cell 30-33μ, breadth 23-24μ, thickness 16μ; breadth of isthmus 9-10μ.

Parvum, cellulis late ellipticis, profunde constrictis, sinu lineari; semicellulis rotundatis pyramidatisque, angulis basalibus rotundatis, a vertice visis ellipticis, in medio 3-crenulatis. Membrana glabra.

Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 10, 1936, floating, brown and green, jelly-like mass in lake (131).

Type. See Plate V, figure 3.

286. **Cosmarium turpinii** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, IV, p. 127, Pl. I, fig. 11 (1856).

A very abundant and widespread desmid in the Eastern Arctic regions of Canada.

General Distribution. Europe, Iceland, Novaya Zemlya, Asia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8, 1936, on *Carex* stalks (6), in floating mass of Algae (7), also Polunin Sept. 10, 1936, on submerged weeds in a lake (60), floating in a lake (131).

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), from margin of a lake (119).

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[1] Apparently new to Canada. (N.P.)

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74), flocculent mass in freshwater stream (73), in freshwater lake (84).

var. **eximium** W. & G. S. West, British Desmidiaceae III, p. 192, Pl. LXXXIII, fig. 3 (1908).

Occurring with the typical form of the species.

General Distribution. Ireland.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8, 1936, on *Carex* stalks (6), in floating masses of Algae (7).

287. **Cosmarium undulatum** [Corda, Almanach de Carlsbad, p. 243, Pl. V, fig. 26 (1839)].

This species occurred in many localities, usually in fair abundance.

General Distribution. Europe, Spitsbergen, Lapland, Asia, Africa, North America, northwestern Canada, Greenland.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a freshwater stream (144).
3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, on frozen soil surface (4); *Arctic Bay,* Sept. 8, 1936, on *Carex* stalks (6), in floating masses of Algae (7).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93), from lakeside (104).

var. **minutum** Wittrock, Nova Acta Reg. Soc. Scient. Upsaliensis, ser. 3, VII, p. 11, Pt. I, fig. 3 (1869).

Very few specimens were found of this variety.

General Distribution. Europe.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84).

288. **Cosmarium viride** (Corda) Joshua, Jour. Bot., XXIII, p. 34, Pl. CCLIV, fig. 3 (1885).

Only two specimens of this Alga were found.

General Distribution. Europe, Asia, Africa, North America.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936, in fresh water (12).

289. **Xanthidium antilopaeum** (Bréb.) Kütz., Species Alg., p. 177 (1849).

Very few specimens of this desmid were found.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, North and South America, northwestern Canada.

E. Arctic Occurrence.

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[1] Apparently new to the whole of America. (N.P.)

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74).

var. **triquetrum** Lundell, De Desmid. Suec., p. 76, Pl. V, fig. 1 (1871).

This variety occurred very sparingly in a single vial. The cells were 60-62μ long, 45-46μ broad (without the spines, which were 10-11μ long), and had an isthmus 20-22μ broad. The spot in the middle of each face of the semicell was of pronounced thickness and deep yellow colour. *See* Plate VIII, figure 3.

General Distribution. Europe, North and South America.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, in a shallow pool (67).

290. **Xanthidium cristatum** de Brébisson, in Ralfs, British Desmidieae, p. 115, Pl. XIX, fig. 3 (1848).

Only a few examples of this desmid were found.

General Distribution. Europe, Asia, Africa, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Sept. 27, 1936, in fresh water (116).

291. **Arthrodesmus bifidus** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 135, Pl. I, fig. 19 (1856).

A rare desmid in the one collection in which it occurred.

General Distribution. Europe, Asia, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

292. **Arthrodesmus octocornis** [Ehrenberg, Die Infusionsthierchen als vollkommene Organismen, p. 152 (1838)].

Found in one collection rich in desmids.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, Australia, North America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140). Not abundant.

293. **Arthrodesmus ralfsii** W. West, Jour. Linn. Soc., Bot., XXIX, p. 168 (1892).

Not infrequently found. On Plate VI, figure 5, is shown a specimen having a more convex apex than most of those observed.

General Distribution. Europe, Asia, North and South America, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rock in freshwater lake (146), on moss in swift freshwater stream (147).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

294. **Arthrodesmus triangularis** Lagerheim, Öfv. K. Vet. Akad. Förh. Stockholm, XLII, 7, p. 244, Pl. XXVII, fig. 22 (1885).

Very rare in its one collection, only three specimens being found.

General Distribution. Europe, Asia, North and South America.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rock in freshwater lake (146).

295. **Staurastrum acarides** Nordstedt, Desmid. Spetsb., p. 40, Pl. VII, fig. 26 (1872).

This was found in abundance in one station.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, North America, Greenland.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in bed of stream (123).

296. **Staurastrum aculeatum** [(Ehrenb.) Meneghini, Synopsis Desmidiarum huiusque cognitarum, p. 226 (1840)].

This was quite common in the two vials in which it was found.

General Distribution. Europe, Novaya Zemlya, Asia, Australia, the Antarctic, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in the bed of a swift, freshwater stream (28).

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

297. **Staurastrum alternans** de Brébisson, in Ralfs, British Desmidieae, p. 132, Pl. XXI, fig. 7 (1848).

Several specimens of this desmid were found. In many of them the granules were inconspicuous or even completely wanting except on the processes. The plants were mostly small, being 21-24μ long, 21-25μ broad, and having an isthmus 7·5-8μ broad. *See* Plate VI, figure 13.

General Distribution. Europe, Iceland, the Faeröe Islands, Novaya Zemlya, Asia, Africa, North America, Greenland.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in deposit in a lake (97); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111).

298. **Staurastrum anatinum** Cooke & Wills, in Cooke, Grevillea, p. 92, Pl. CXXXIX, fig. 6 (1880).

This species was fairly common in one collection.

General Distribution. Europe, North America.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rock in freshwater lake (146).

299. **Staurastrum apiculatum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 142, Pl. I, fig. 23 (1856).

Specimens of this were especially numerous in the rich desmid material from Chesterfield. They were mostly 30µ long, 30µ broad, and had an isthmus 7µ broad.

General Distribution. Europe, Asia, Australia, North America, Greenland.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84).

300. **Staurastrum avicula** de Brébisson, in Ralfs, British Desmidieae, p. 140, Pl. XXIII, fig. 11 (1848).

A species frequently observed in one collection rich in desmids. *See* Plate VI, figure 17.

General Distribution. Europe, the Faeröe Islands, Asia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin, July 27, 1936, in a tundra pool (140).

301. **Staurastrum baffinensis** *n. sp.*

Cells small, about one-third longer than broad, deeply constricted, with the sinus widely open. Semicells somewhat obcuneate, with the lateral margins and the apex convex. The lateral angles are rounded. In vertical view the whole is triangular, with the sides very convex and the angles subacute. Cell-wall smooth.

Cell length 32-33µ, breadth 22-26µ; breadth of isthmus 12-13µ.

Parvum; $\frac{1}{3}$ longius quam latum, profunde constrictum, sinu ampliato; semicellulis subobcuneatis, marginibus lateralibus et dorsalibus convexis; angulis rotundatis. A vertice visis triangularibus, marginibus convexis, angulis subacutis. Membrana glabra.

Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from bed of swift freshwater stream (28).

Type. See Plate VI, figure 19.

302. **Staurastrum bicorne** Haupfleisch, Mitth. a. d. Naturwiss. Ver. f. Neuvor.-pommern. u. Rügen. Jahrg. XX, p. 37, Pl. III, figs. 21, 24, 27 (1888).

There were several specimens of this desmid among the many other species in vial No. 116. The cells were 54µ long, 75-78µ broad (with the processes), and 19µ thick. The isthmus was 14µ broad.

General Distribution. Europe, Australia.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] Apparently new to the whole of America. (N.P.)

303. **Staurastrum bieneanum** Rabenhorst, Alg. Europ. No. 1410 (1862).

This desmid was usually fairly abundant. In some collections both tri- and tetragonal forms were found, both being numerous.

General Distribution. Europe, Asia, Africa, North America.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, in a small, frozen, freshwater pool (64).
4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rocks in freshwater lake (146).
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in bed of swift freshwater stream (28), in fresh water (116).
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, from margin of lake (119).

f. **spetsbergensis** Nordstedt, Desmidieae Arctoae, p. 32, Pl. VIII, fig. 35 (1875).

A few examples of this form were found. They were 40-44μ long and about as broad, the isthmus being 13-14μ in breadth.

General Distribution. Northern regions—Greenland, the Faeröe Islands, Spitsbergen, Siberia.[1]

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a freshwater pool (18).

304. **Staurastrum brachiatum** [Ralfs, Ann. Mag. Nat. Hist., p. 151, Pl. X, fig. 3 (1845)].

Several specimens were found. The cells exhibited a variety of shapes, having the processes in many instances reduced almost to non-existence. Some cells, again, were rather small. The smallest observed was 23μ long, 22μ broad, and had an isthmus 10μ broad. *See* Plate VI, figure 12.

General Distribution. Europe, the Faeröe Islands, Asia, Australia, North and South America, Greenland.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

305. **Staurastrum brachycerum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 139, Pl. I, fig. 24 (1856).

Never found in abundance in this collection.

General Distribution. Europe.[2]

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).
5. S. BAFFIN: *Lake Harbour,* Polunin July 26, 1936, on lake bottom (118).

306. **Staurastrum brebissonii** Archer, in Pritchard, History of Infusoria, p. 739 (1861).

Examples of this species were fairly numerous in two collections from Chesterfield. The cells were 52μ long, 60μ broad (without the spines, which were 2-2·5μ long), and had an isthmus 15μ broad.

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[1] Apparently new to Canada. (N.P.)

[2] Apparently new to the whole of America. (N.P.)

General Distribution. Europe, Spitsbergen, Novaya Zemlya, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74), in a tiny freshwater pool (92).

307. **Staurastrum brevispinum** de Brébisson, in Ralfs, British Desmidieae, p. 124, Pl. XXXIV, figs. 7 a-b (1848).

Cell length 32-35μ, breadth 31-35μ; breadth of isthmus 10μ.

General Distribution. Europe, Iceland, Novaya Zemlya, Asia, Africa, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16). Rare in this collection.
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

308. **Staurastrum clepsydra** Nordstedt, in Warming, Vidensk. Medd. f. d. naturh. Foren. i Kjøbenhavn, p. 224, Pl. IV, fig. 47 (1870).

A few specimens were found which appear to belong to this species.

General Distribution. Europe, Spitsbergen, North and South America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

var. **sibiricum** (Borge) W. & G. S. West, British Desmidiaceae IV, p. 152, Pl. CXXII, figs. 7-8 (1912).

Length of cells 20μ, breadth 20μ; breadth of isthmus 9μ. In one vial (No. 37) some of the cells were only 15μ long, 15μ broad, and had an isthmus 7-8μ broad. In no collection was this desmid abundant.

General Distribution. Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in seepage over rocks (141); *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves in fresh water (37).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a tundra pool (21).

309. **Staurastrum compactum** *n. sp.*

Cells rather small, about 1·5 times as long as broad, moderately constricted with an open sinus. Semicells varying from subrectangular with rounded apex to hexagonal. Basal angles rounded, sides straight or rarely slightly convex. In vertical view triangular with slightly convex sides and broadly rounded angles. Cell-wall smooth and colourless.

Cell length 35-37μ, breadth 25-26μ; breadth of isthmus 12-15μ.

Parvum, medio leviter constrictum, sinu amplo. Semicellulis subquadratis vel subhexagoniis, marginibus lateralibus rectis, superioribus rotundatis vel conicis. A vertice visis triangularibus, marginibus leniter convexis, angulis rotundatis. Membrana glabra.

Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

Type. See Plate VI, figure 7.

310. **Staurastrum controversum** [de Brébisson, in Meneghini, Linnaea, XIV, p. 228 (1840)].

Two small specimens were found. They were 30μ long, 35μ broad (including processes), and had an isthmus 7μ in breadth.

General Distribution. Europe, North America.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23).

311. **Staurastrum crenulatum** (Nägeli) Delponte, Memor. d. R. Accad. d. scienze di Torino, ser. 2, XXX, p. 164, Pl. XII, figs. 1-11 (1877).

This desmid was found in fair numbers. The cells were 23-30μ long, 28-35μ broad, and had the isthmus 6-9μ in breadth.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, North America.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, on moss in swift, freshwater stream (147).
7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

312. **Staurastrum cristatum** (Nägeli) Archer, in Pritchard, History of Infusoria, p. 738 (1861).

Several specimens of this desmid were found. They were relatively uniform in size, being 37-38μ long, 38-44μ broad, and with an isthmus about 20μ in breadth. Each angle is tipped with a rather blunt spine about 2μ long, and directed outwards. The dorsal surface of each angle bears two rows of 2-3 short, blunt spines. The lateral surface may also bear 1-3 spines variously located on the angle of the semicell. The cell-wall is very faintly punctate. Most of the cells were trigonal in end view, but a few were tetragonal, and in one specimen one semicell was trigonal and the other tetragonal. *See* Plate VII, figure 7.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Asia, Greenland.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

313. **Staurastrum cuspidatum** [de Brébisson, in Meneghini, Linnaea, XIV, p. 226 (1840)].

Length of cells 30μ, breadth 29μ; breadth of isthmus 8μ; length of spines 12μ.

General Distribution. Europe, the Faeröe Islands, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, from margin of a lake (119). Not common.

314. **Staurastrum cyrtocerum** de Brébisson, in Ralfs, British Desmidieae, p. 139, Pl. XXII, fig. 10 (1848).

This desmid was quite abundant when present. Length of cells 32-38μ, breadth with processes 38-50μ; breadth of isthmus 9-11μ.

General Distribution. Europe, Spitsbergen, Asia, Australia, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in running water, drying up (136).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), in scum on slimy *Carex* (107); *Cape Smith,* Polunin Aug. 3, 1936, from margin of a lake (119).

var. **compactum** W. & G. S. West, Trans. Bot. Soc. Edinburgh, XXIII, p. 26, Pl. II, fig. 29 (1905).

Found in only one vial, and not at all abundantly. Length of cells 36-38μ, breadth (with processes) 40μ; breadth of isthmus 11-12μ.

General Distribution. Scotland.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, on mud (14).

315. **Staurastrum dejectum** [de Brébisson, in Meneghini, Linnaea, XIV, p. 227 (1840)].

Not abundant.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, Africa, Australia, North and South America, Alaska, Greenland.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, on bed of a freshwater stream (74).

var. **inflatum** W. West, Jour. Linn. Soc., Bot., XXIX, p. 170, Pl. XXII, fig. 11 (1892).

Among numerous other desmids; not abundant.

General Distribution. The Scandinavian peninsula.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

316. **Staurastrum dickiei** Ralfs, British Desmidieae, p. 123, Pl. XXI, fig. 3 (1848).

Of rather common occurrence where present. Some of the largest specimens are shown on Plate VII, figure 6.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, Australia, North and South America, Greenland.

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[1] Apparently new to the whole of America. (N.P.)

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116), in a tundra pool (140).
7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, from bed of a freshwater stream (74).

317. **Staurastrum dilatatum** [Ehrenberg, Die Infusionsthierchen als vollkommene Organismen, p. 143, Pl. X, fig. 13 (1838)].

Not uncommon in several collections.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, on moss in swift, freshwater stream (147).
7. N. LABRADOR: *Burwell,* Polunin date ? 1936, in stream bed (25).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

318. **Staurastrum forficulatum** Lundell, Desmid. Suec., p. 66, Pl. IV, fig. 5, Upsala (1871).

var. **longicornis** Schmidle, Bih. till K. Sv. Vet.-Akad. Handl., XXIV, 8, p. 55, Pl. II, figs. 42-3 (1898).

This desmid was found only in very small numbers in one collection. The cells were 40-43μ long without processes, 50-55μ long with processes; they were 32-34μ broad without processes, 42-50μ broad with them. The isthmus was 15-16μ broad. Near the bases of the large spines were placed several small, irregularly disposed spines. *See* Plate VII, figure 8.

General Distribution. Scandinavia.[1]

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, on bed of a tiny pool (134).

319. **Staurastrum furcatum** (Ehrenb.) de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, p. 136 (1856).

Found in large numbers. Length of cells 30-32μ, breadth 34-38μ (including the spines), and breadth of isthmus 10-11μ. The distribution and shape of the spines varied considerably. *See* Plate VII, figure 5.

General Distribution. Europe, Iceland, Asia, Australia, North America.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

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[1] Apparently new to the whole of America. (N.P.)

320. **Staurastrum furcigerum** [de Brébisson, in Meneghini, Linnaea, XIV, p. 226 (1840)].

This was never found in large numbers, although occurring in several places. The largest specimens were 55µ long (without processes, or 80µ with), 75µ broad (with processes), and possessed of an isthmus 20-21µ broad.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16), also Polunin Aug. 27, 1936, in fresh water (116).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in scum from slimy *Carex* (107).
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of colonial animal (69).

321. **Staurastrum glabrum** (Ehrenb.) Ralfs, British Desmidieae, p. 217 (1848).

A desmid found only rarely in two vials. Rather variable in No. 104. *See* Plate VI, figure 15.

General Distribution. Europe, Asia, North America.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, with brown, filamentous Algae (151).
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

322. **Staurastrum gracile** [Ralfs, Ann. Mag. Nat. Hist., p. 155, Pl. XI, fig. 3 (1845)].

This species was never very abundant.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, from edge of lake (16), also Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fresh water (116).
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, from margin of a lake (119).

323. **Staurastrum granulosum** (Ehrenb.) Ralfs, British Desmidieae, p. 217 (1848).

A few cells of this desmid were found. Among the specimens in vial 140 were several of the type shown on Plate VII, figure 2. Length of cells 30-31µ, breadth 28-30µ; breadth of isthmus 11-12µ.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
8. N. BAFFIN: *Cape Smth,* Polunin Aug. 3, 1936, in running fresh water (111).

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[1] Apparently new to the whole of America. (N.P.)

324. **Staurastrum gratum** *n. sp.*

The cells are of medium size, about one-third longer than broad, moderately constricted, with the sinus narrowly linear. Semicells subsemicircular, with the lateral margins showing 8-9 broad, low crenulations, and the apical part somewhat truncated and faintly 3- or 4-undulate. Triangular in vertical view, with slightly convex margins and broadly rounded angles, which show about six granulations. Granules commonly arranged in rows along the angles, but sometimes only faintly visible.

Cells 40μ long, 30μ broad, and with an isthmus 16-17μ broad.

Mediocre, tertio parte longius quam latius, mediocriter constrictum, sinu lineari; semicellulis subsemicircularibus, marginibus lateralibus 8-9 crenulatis, dorsalibus paulo truncatis, 3-4 crenulis. A vertice visis triangularibus, marginibus leniter convexis, angulis truncatis, granulis 6. Membrana granulata, granulis in angulis saepe linearibus.

Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in seepage from wet rocks (141).

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in seepage from cliff (22).

Type from No. 22. *See* Plate VI, figure 20.

325. **Staurastrum hexacerum** (Ehrenb.) Wittrock, Bih. till K. Sv. Vet.-Akad. Handl., I, 1, p. 51 (1872).

Seen in three vials of the present collection, but only rarely in each. The cells found were 25-26μ long, 30-35μ broad (including processes), and had an isthmus 7·5μ in breadth.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, scrapings from rock in fresh water (44).

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnant fresh water (42), also Polunin Aug. 27, 1936, in a fast, freshwater stream (59).

326. **Staurastrum inconspicuum** Nordstedt, Acta Univ. Lund, IX, p. 26, Pl. I, fig. 11 (1873).

A few specimens of this tiny desmid were found in one vial from Wakeham Bay. They were 20μ long (with processes), about the same in breadth, and had an isthmus 8μ broad.

General Distribution. Europe, the Faeröe Islands, Asia, North and South America.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

327. **Staurastrum inconstans** *n. sp.*

Cells of medium size, about as long as broad, deeply constricted with an open sinus. Semicells elliptic with acute apices. Lateral margin with 5 prominent crenulations. Apical margin with 4-5 crenulations on either side; central part smooth. In vertical view tetragonal, with concave sides having 2-4 crenulations near the angles. Granules rather large, arranged in 2-3 distinct rows around each angle. Cells 37-38μ long, 39-40μ broad, with the isthmus 12μ broad.

Mediocre, fere tam longum quam latum, profunde constrictum, sinu amplo. Semicellulis fusiformibus, apicibus acutis; marginibus lateralibus leniter convexis, 5-granulatis. Margine dorsali convexo, 4-5 granulato vel verrucoso, in medio laevi. A vertice visis quadrangularibus, lateribus concavis, 2-3 granulatis in angulis.

Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, among green Algae in running water, fast drying up (136).

Type. See Plate VI, figure 18.

328. **Staurastrum inflexum** de Brébisson, Mém. Soc. Imp. Sci. Nat. de Cherbourg, IV, p. 140, Pl. I, fig. 25 (1856).

This desmid was never very abundant. The cells were 21-25μ long, 30-36μ broad (including the processes), and had an isthmus 7-8μ in breadth.

General Distribution. Europe, Asia.[1]

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936, in fresh water (12).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, brown, filamentous Algae (151).
8. N. Quebec: *Wakeham Bay,* Polunin July 30, 1936, in cold seepage from late-lying snow (105).

329. **Staurastrum iotanum** Wolle, Desmids of the United States, p. 137, Pl. LI, figs. 5-7 (1884).

This minute species was rare. The cells were 11μ long (without the processes, or 17μ with them), and 17μ broad (with the processes). The isthmus was 5μ broad.

General Distribution. Europe, Asia, New Zealand, Madagascar, North America.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

330. **Staurastrum inornatum** *n. sp.*

Cells rather large, deeply constricted with a widely open sinus; semicells broadly cuneate, with the apex flat or slightly convex, and the lateral margins slightly concave. Angles terminating in three short, blunt spines. Cell-wall smooth. In vertical view quadrangular, with lateral margins concave, and with two to three broad but faint crenulations usually visible on the angles. Length 50-52μ, breadth 55-60μ; breadth of isthmus 20μ.

Mediocre, medio profunde constrictum, sinu subrectangulo; semicellulis late cuneatis, dorso leniter convexo, marginibus lateralibus concavis; angulis superioribus in 3 aculeos parvos fissis; a vertice visis quadratis, angulis truncatis, marginibus concavibus, 2-3 undulatis simulatis. Membrana glabra.

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[1] Apparently new to the whole of America. (N.P.)

Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).

Type. See Plate VII, figure 4.

331. **Staurastrum johnsonii** W. & G. S. West, Trans. Linn. Soc., Bot., ser. 2, V, p. 266, Pl. XVII, fig. 16 (1896).

A few specimens of this were found in one vial. They were 70-75µ long (with processes), 70-85µ broad (with processes, or 19-21µ without), and 12µ thick.

General Distribution. The United States.[1]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

332. **Staurastrum lunatum** Ralfs, British Desmidieae, p. 124, Pl. XXXIV, fig. 12 (1848).

Many specimens of this desmid were found in two vials.

General Distribution. Europe, the Faeröe Islands, Asia, North America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), from margin of a lake (119).

var. **planctonicum** W. & G. S. West, Jour. Linn. Soc., Bot., XXXV, p. 546, Pl. XVI, figs. 11-12 (1903).

This is a rather rare desmid in its one collection.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

8. N. QUEBEC: *Sugluk,* Polunin July 31, 1936, with green, filamentous Algae (109).

333. **Staurastrum margaritaceum** [(Ehrenb.) Meneghini, Linnaea, XIV, p. 227 (1840)].

A few specimens of this desmid were found.

General Distribution. Europe, Spitsbergen, Asia, North and South America, Greenland.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, soft jelly on rock in freshwater lake (146).

334. **Staurastrum meriani** Reinsch, De speciebus generibusque nonnullis novis ex Algarum et Fungorum classe, p. 125, Pl. XXIII, D1, figs. 1-11 (1867).

This desmid was very abundant when present. *See* Plate VII, figure 3.

General Distribution. Europe, the Faeröe Islands, North America, Greenland.

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[1] Apparently new to Canada. (N.P.)

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in a swift, freshwater stream (28), in fresh water (29), also Polunin July 28, 1936, in seepage from rocks (141).

335. **Staurastrum mucronatum** [Ralfs, Ann. Mag. Nat. Hist., p. 152, Pl. X, figs. 5-6 (1845)].

This species was found several times with other desmids, but only in small numbers.

General Distribution. Europe, North and South America.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, from surface of frozen soil (4).
5. S. Baffin: *Lake Harbour,* Polunin July 28, 1936, in running water, drying up (136).
8. N. Quebec: *Wakeham Bay,* Polunin 29, 1936, from lakeside (104).

var. **subtriangulare** W. & G. S. West, Jour. Linn. Soc., Bot., XXXV, p. 545, Pl. XVII, fig. 11 (1903).

A few specimens of this variety were found. They were 36μ long, 38μ broad (without spines), and had an isthmus 11·5-12μ broad. The spines were 4μ long.

General Distribution. Europe, Asia.[1]

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

336. **Staurastrum muticum** [de Brébisson, in Meneghini, Linnaea, XIV, p. 228 (1840)].

This small desmid was very common in most localities in which it occurred.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 10, 1936, in fresh water (12), on *Carex* stalks on shallow lake bottom (1).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, scrapings from rock in freshwater lake (145), on moss in swift, freshwater stream (147), on wet mud (159).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in fast, freshwater stream (59).
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a small pool (61).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107), also Polunin July 30, 1936, in seepage from late-lying snow in stream (105).
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 22, 1936, with slimy Algae on lake bottom (5).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in freshwater lake (84).

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[1] Apparently new to the whole of America. (N.P.)

337. **Staurastrum natator** W. West, Jour. Linn. Soc., Bot., XXIX, p. 183, Pl. XXIII, fig. 14 (1892).

A few cells of this desmid were found. They were very distinct in the arrangement of the granules. *See* Plate VIII, figure 10.

General Distribution. Northern Europe, North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

338. **Staurastrum neglectum** G. S. West, Jour. Linn. Soc., Bot., XXXIX, p. 70, Pl. III, fig. 12 (1909).

A few specimens were found in a collection rich in other desmid species. Length of cells 25μ, breadth (with processes) 34-36μ.

General Distribution. Europe (Sweden), Australia, the United States.[1]

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, from margin of lake (119).

339. **Staurastrum orbiculare** [Ralfs, Ann. Mag. Nat. Hist., XV, p. 152, Pl. X, fig. 4 (1845)].

Not abundant, a few cells being found scattered among filaments of *Zygnema* sp.

General Distribution. Europe, North America, northwestern Canada.

E. Arctic Occurrence.

8. N. Quebec: *Wolstenholme,* Polunin Aug. 1, 1936, in seepage, drying up (121).

var. **ralfsii** W. & G. S. West, British Desmidiaceae IV, p. 156, Pl. CXXIV, figs. 12, 13, 15, 16 (1912).

This variety was present in a collection containing many other desmids. The cells were 32-35μ long, 30-32μ broad, and had an isthmus 8-9μ in breadth.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Australia, North and South America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

340. **Staurastrum pachyrhynchum** Nordstedt, Desmidieae Arctoae, p. 32, Pl. VIII, fig. 34 (1875).

When present, this desmid was of rather common occurrence. The cells in face view show considerable variation both in the nature of the apical part and in the shape of the isthmus. *See* Plate VI, figure 16.

General Distribution. Europe, Spitsbergen, Novaya Zemlya, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a stream (53), in slow, muddy stream (54).

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[1] Apparently new to Canada. (N.P.)

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in scrapings from rock in freshwater lake (145).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).

341. **Staurastrum polymorphum** de Brébisson, in Ralfs, British Desmidieae, p. 135, Pl. XXII, fig. 9, and Pl. XXXIV, fig. 6 (1848).

This desmid was usually fairly abundant in the collections in which it was found.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, North and South America, Alaska, northwestern Canada, Greenland.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, in soft jelly on rock in freshwater lake (146).
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in deposit in lake (97), from lakeside (104).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69), also Polunin Aug. 20, 1936, in a lake (23).

342. **Staurastrum polytrichum** (Perty) Rabenhorst, Flora Europ. Alg. III, p. 214 (1868).

This was found sparingly among other desmids in a single vial. The cells were 45-50μ broad (without spines), and 55-70μ long (without spines). The isthmus was 20-22μ broad. The spines were 10-11μ long.

General Distribution. Europe, Asia, North and South America, northwestern Canada.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

343. **Staurastrum proboscidium** (Bréb.) Archer, in Pritchard, History of Infusoria, p. 742 (1861).

A few specimens of this desmid were found in several different collections. *See* Plate VII, figure 9.

General Distribution. Europe, Asia, Africa, South America.[1]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, on frozen soil surface (4), from eddy of peaty brook (41).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111).
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 22, 1936, from lake bottom (5).

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[1] Apparently new to North America. (N.P.)

344. **Staurastrum punctulatum** de Brébisson, in Ralfs, British Desmidieae, p. 133, Pl. XXII, fig. 1 (1848).

This was one of the members of the genus found most frequently in the present collection.

General Distribution. Europe, Iceland, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, on frozen soil surface (4), in a slow, muddy streamlet (54).

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in stagnating fresh water (42).

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104), in scum on slimy *Carex* (107), also Polunin July 30, 1936, in cold seepage from late-lying snow (105); *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

var. **pygmaeum** (Bréb.) W. & G. S. West, British Desmidiaceae IV, p. 184, Pl. CXXVIII, figs. 1-2 (1912).

This variety was present in small numbers mixed with the typical form of the species in two collections.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, North and South America, Greenland.

E. Arctic Occurrence.

8. N. Quebec: *Cape Smith,* Polunin Aug. 3, 1936, on damp, marshy soil (110).

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a tiny freshwater pool (92).

345. **Staurastrum pyramidatum** W. West, Jour. Linn. Soc., Bot., XXIX, p. 178 (1892).

Several specimens of this were found in one vial from northernmost Labrador. They were 55-60μ long, 46-53μ broad, and had an isthmus 14·5-18μ broad.

General Distribution. Europe, Africa.[1]

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 24, 1936, in stream bed (123).

346. **Staurastrum rhabdophorum** Nordstedt, Desmidieae Arctoae, p. 36, Pl. VIII, fig. 40 (1875).

This desmid was found in abundance in a tangle of sterile *Zygnema* filaments. *See* Plate VII, figure 1.

General Distribution. Spitsbergen and Novaya Zemlya.[1]

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 6, 1936, on island in glacier[2] (49).

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[1] Apparently new to the whole of America. (N.P.)

[2] I.e., a *nunatak,* though only a small one recently exposed—*See* Part III of the present series. (N.P.)

347. **Staurastrum setigerum** Cleve, Öfv. K. Vet. Akad. Förh. Stockholm, XX, 10, p. 490, Pl. IV, fig. 4 (1864).

Several specimens of this were found in one gathering from Wakeham Bay.

General Distribution. Europe, Africa, North and South America, northwestern Canada.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

348. **Staurastrum spongiosum** de Brébisson, in Ralfs, British Desmidieae, p. 141, Pl. XXIII, fig. 4 (1848).

A few specimens of this desmid were found in a collection including many other species. The cells were 48-50μ long, 42-44μ broad, and had an isthmus 12-13μ broad.

General Distribution. Europe, Spitsbergen, North and South America, Greenland.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 24, 1936, in a small pool (61).

349. **Staurastrum subpygmaeum** W. West, Jour. Linn. Soc., Bot., XXIX, p. 178, Pl. XXIII, fig. 8 (1892).

Among many other desmids in two collections were found a few cells of this species. They were 40-45μ long, about as broad, with an isthmus 15-16μ broad, and had faintly punctate walls.

General Distribution. The British Isles.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936, in stagnating seepage (117).

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, in bed of freshwater stream (74).

var. **subangulatum** W. & G. S. West, British Desmidiaceae IV, p. 163, Pl. CXXIV, fig. 1 (1912).

A few specimens of this variety were found among the large number of other desmids in its one vial. They were 39-43μ long, 36-40μ broad, and had an isthmus 14-16μ broad. Most of the cells were trigonal in vertical view, but one was tetragonal.

General Distribution. Scotland.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

350. **Staurastrum subvarians** *n. sp.*

Cells of medium size, deeply constricted; sinus rectangular with rounded tip. Semicells sub-elliptical with convex apices and sides. Angles rounded. In vertical view triangular, with the sides straight or slightly concave. Granules restricted to the angles of the cells, in 3-5 more or less distinctly concentric series around the angles.

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[1] Apparently new to the whole of America. (N P.)

Cell length 50-52μ, breadth 40-42μ; breadth of isthmus 10-12μ.

Mediocre, profunde constrictum, sinu rectangulo; semicellulis subellipticis; marginibus lateralibus et dorsalibus convexis; a vertice visis triangulis, marginibus rectis vel leniter concavis. Membrana in angulis granulata, in medio laeve.

Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 9, 1936, from the edge of a freshwater pool (50).

Type. See Plate VI, figure 11.

351. **Staurastrum teliferum** Ralfs, British Desmidieae, p. 128, Pl. XXII, fig. 4, and Pl. XXXIV, fig. 14 (1848).

A rather common species in two collections. The cells were 38-40μ long, 31-33μ broad, and had an isthmus 10μ broad. The spines were 13-14μ long.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

352. **Staurastrum tetracerum** [Ralfs, Ann. Mag. Nat. Hist., XV, p. 150, Pl. X, fig. 1 (1845)].

Of rare occurrence in two gatherings.

General Distribution. Europe, Iceland, the Faeröe Islands, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19, 1936, on sheath of a colonial animal (69).

353. **Staurastrum tohopekaligense** Wolle, Fresh-water Algae of the United States, p. 45, Pl. LIX, figs. 4-5 (1887).

var. **trifurcatum** W. & G. S. West, Trans. Linn. Soc., Bot., ser. 2, V, 2, p. 80, Pl. IX, fig. 8 (1895).

Two specimens were found. Without processes they were 28-30μ broad, with them 50-54μ; length without processes 44-47μ, with processes 72-74μ. The isthmus was 12-13μ broad.

General Distribution. Madagascar, Australia, Ceylon.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936, in fresh water (116).

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[1] This variety appears to be new to America. (N.P.)

354. **Staurastrum varians** Raciborski, Pamiet. Wydz. Akad. Umiej. matem.-przy. Krakow, X, p. 86, Pl. III, fig. 1 (1885).

var. **badense** Schmidle, Oesterreich Bot. Zeitsch., XLV, p. 62, Pl. XVI, fig. 8 (1895).

Specimens of this were not uncommon in one collection. They showed some variation both in shape and in the prominence of the granules. They were 40-42μ long, 38-40μ broad, and had an isthmus 17μ broad. Plate VI, figure 14, shows one example.

General Distribution. Europe.[1]

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in cold seepage from late-lying snow (93).

355. **Staurastrum vestitum** Ralfs, British Desmidieae, p. 143, Pl. XXIII, fig. 1 (1848).

Several specimens were found; in them the spines on the lateral margins showed a considerable degree of variation. *See* Plate VI, figure 8.

General Distribution. Europe, Asia, Australia, North and South America, northwestern Canada.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936, on moss in swift freshwater stream (147).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104); *Cape Smith,* Polunin Aug. 3, 1936, in running fresh water (111), from margin of lake (119).

356. **Sphaerozosma granulatum** Roy & Bissett, Jour. Bot., XXIV, p. 242, Pl. CCLXVIII, fig. 17 (1886).

Although it was by no means abundant, several filaments of this desmid were found in each of two collections.

General Distribution. Europe, Asia, Australia, North and South America.

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936, on rotting *Carex* leaves (37).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107).

357. **Spondylosium planum** (Wolle) W. & G. S. West, Jour. Linn. Soc., Bot., XL, p. 430, Pl. XIX, figs. 5-8 (1912).

Not very common.

General Distribution. Europe, North America, Alaska, northwestern Canada.

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 15, 1946, among brown, filamentous Algae (151).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

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[1] Not merely this variety but also the whole species appears to be new to America. (N.P.)

358. **Hyalotheca dissiliens** (Smith) de Brébisson, in Ralfs, British Desmidieae, p. 51, Pl. I, fig. 1 (1848).

Found in collections from many stations, usually in abundance.

General Distribution. Europe, the Faeröe Islands, Spitsbergen, Novaya Zemlya, Asia, Africa, Australia, North and South America, northwestern Canada, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, from eddy of peaty brook (41). Infrequent: filaments 30-35μ in diameter.

4. C. BAFFIN: *Clyde,* Polunin Sept. 15, 1936, among brown filamentous Algae (151), on wet mud (159). Common.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140), also Polunin Aug. 27, 1936, in a swift, freshwater stream (28), in a fast, freshwater stream (59), in fresh water (116). Common.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, in scum on slimy *Carex* (107), a few filaments only, from lakeside (104). Common.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936, from bed of freshwater stream (74), in a tiny freshwater pool (92). Common.

359. **Desmidium swartzii** [Agardh, Syst. Alg., p. 9 (1824)].

Only a few filaments of this were found.

General Distribution. Europe, Asia, Africa, Australia, North and South America, Greenland.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936, on bed of tiny pool (134); *Arctic Bay,* Polunin Sept. 9, 1936 (137).

PERIDINEAE

GLENODINIACEAE

360. **Glenodinium dybowskii**[1] (Woloszynska) "Lindemann".[2]

This creature was found sparingly, one or two individuals usually appearing in each drop of preservative that was taken from the two vials in which it occurred.

General Distribution. Europe, the United States.[3]

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin, July 26, 1936, on lake bottom (118).

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936, from lakeside (104).

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[1] This is the spelling of the original publication under *Peridinium* (by Woloszynska, Bull. Internat. Acad. Sci. Cracovie, sér. B, No. 8-10 B, p. 273 (1915)). (N.P.)

[2] There seems to be considerable doubt as to the validity of this combination and separability of the species (cf. Schiller, Rabenhorst's Krypt.-Fl., X, 3, 2, p. 181, 1935, where "*Peridinium Dybowskii*" is placed as a synonym of *P. balticum* (Levander) Lemmerm.). Dr. Whelden omitted to give any literature citation, and the only uses of the combination that I have been able to find are by Lindemann, Bot. Archiv, XIV, pp. 469 and 471 (1926), Smith (1933, p. 603), and others who do not give a reference. (N.P.) Very recently in reply to further inquiries Dr. Whelden (*in litt.*) has sent me the following notes, etc., but the above-mentioned doubts remain: *Peridinium dybowskii* Wolosz., Bull. Acad. Sci. Cracovie, ser. B, p. 273, Pl. XIII. fig. 9 (1916); Lindemann, S., Arch. f. Hydrobiol., XVI, 3, p. 447 (1926) "designates No. 3 as *Glenodinium dybowski* Wolosz."; Eddy, S., Trans. Amer. Micros. Soc., XLIX, pp. 277-321 (1930) cites "*Glenodinium Dybowski* (Wolosz.) Lindemann"; ".... many have made statements about this variability [and 'similarity' mentioned by Schiller *l.c.* and Lindemann *l.c.*], suggesting the *Glenodinium* is perhaps merely a stage in the development or a growth form of *Peridinium.*" (N.P., November 1946).

[3] **Apparently new to Canada. (N.P.)**

361. **Glenodinium neglectum** Schilling, Flora Allg. Bot. Zeit., LXXIV, p. 284, Pl. X, fig. 17 (1891).

Three specimens of this were found. They were 25μ long, and 22μ in diameter.

General Distribution. Europe.[1]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).

Peridiniaceae

362. **Peridinium cinctum** (Müll.) Ehrenberg, Die Infusionsthierchen als vollkommene Organismen, p. 253, Pl. XXII (1838).

This was a minor component in a number of the vials of algal material.

General Distribution. Europe, the United States.[2]

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936, in a shallow, freshwater stream (47).
5. S. Baffin: *Lake Harbour,* Polunin July 27, 1936, in a tundra pool (140).
8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936, in scum squeezed from a slimy *Carex* (107).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, in a lake (23), from bed of freshwater stream (74).

PHAEOPHYCEAE

In the present collection the Brown Algae are rather sparsely represented, as regards both the diversity of forms and the number of specimens available for study.

Ectocarpaceae

363. **Pylaiella[3] littoralis** (L.) Kjellman, Bidrag till Kännedomen om Skandinaviens Ectocarpeer och Tilopterider, p. 99 (1872).

Ectocarpus littoralis (L.) Lyngb.

This Alga was collected many times, and with one exception (not included in the list below) was always found in good fruiting condition, most of the specimens showing unilocular sporangia, while not a few showed plurilocular sporangia. In nearly all the specimens that were observed the branching was mainly opposite, so these specimens may be considered as belonging to var. *opposita* Kjellman.

General Distribution. Circumpolar.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936, on rocks at half-tide mark (34).
4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, forming a brown investment on sand at low-tide level (166), (170), from between tides (179), forming dense tufts 1·5 cm. high (186), (183).

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[1] Apparently new to the whole of America. (N.P.)

[2] Apparently new to Canada. (N.P.)

[3] The original spelling was "Pilayella" but the genus was named after de la Pylaie. (N.P.)

5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936, in a streamlet (marine?) (138).
7. N. Labrador: *Burwell,* Polunin date? 1936, in brackish lagoon (17a), in lagoon (17), also Polunin Sept. 25, 1936 (155), in a tidal lagoon (149).
8. N. Quebec: *Wakeham Bay,* Polunin July 30, 1936, in pools near high-tide level (122), in salt pools (96).
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 20, 1936, growing as an epiphyte on *Fucus* (72).

MESOGLOIACEAE

364. **Chordaria flagelliformis** (Müll.) J. G. Agardh, Species, genera, et ordines Alg. I, p. 66 (1848).

Most of the specimens of this Alga were in a juvenile condition, but nevertheless recognizable as belonging here.

General Distribution. Circumpolar.

E. Arctic Occurrence.
4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936 (183), (185).

MYRIONEMACEAE

365. **Ralfsia verrucosa** (Areschoug) J. G. Agardh, Species, genera, et ordines Alg. I, p. 62 (1848).

Two small, fruiting specimens of this were included in the collection.

General Distribution. Circumpolar.

E. Arctic Occurrence.
4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, from marine habitats (188).
5. S. Baffin: *Lake Harbour,* Polunin July 26, 1936 (19).

DESMARESTIACEAE

366. **Desmarestia aculeata** Lamouroux, Ann. du Mus. d'Hist. Nat., XX, p. 25 (1813).

General Distribution. Circumpolar.

E. Arctic Occurrence.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 14, 1934,[1] (766). Large plants.
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in tidal lagoon (17). Small fragments only.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Aug. 25, 1934[1] (147). Large plants.

DICTYOSIPHONACEAE

367. **Dictyosiphon foeniculaceus** Greville, Algae Britannicae, p. 56, Pl. VIII (1830).

The plants collected were all small, most of them only 12-20 cm. long.

General Distribution. Circumpolar.

E. Arctic Occurrence.
7. N. Labrador: *Burwell,* Polunin July 24, 1936, in a salt or brackish lagoon (17).[2]

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[1] A few sheets of the commoner large Algae which I collected and dried during the Canadian Eastern Arctic Expedition of 1934 (when much cryptogamic material was lost through an accident at sea) are considered here, under my original field numbers as are also most 1936 specimens that were dried. (N.P.)

[2] According to Taylor (1937, pp. 183-4) this species is widespread in our area. (N.P.)

ASPEROCOCCACEAE

368. **Asperococcus echinatus** Greville, Algae Britannicae, p. 50, Pl. IX (1830).

Many small plants, from 5-20 cm. long.

General Distribution. Northern Atlantic coasts of Europe and America.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 20, 1936, from between tide-marks (182).
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, in a tidal pool (38).

LAMINARIACEAE

369. **Laminaria saccharina** (L.) Lamouroux, Ann. du Mus. d'Hist. Nat., XX, p. 42 (1813).

There were three small specimens of this Alga, apart from indeterminable fragments that may also belong here.

General Distribution. Circumpolar.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 12, 1934[1] (658).
4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 19-20, 1936 (2614).
7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936 (2625).

370. **Agarum turneri** Postels & Ruprecht, Illustrationes Algarum Oceani Pacifici imprimis septentrionales, p. 12, Pl. XXII (1840).

Several fragments of this Alga were present in the collections.

General Distribution. Greenland, Arctic America, northern Atlantic and Pacific coasts of America.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 14, 1934[1] (764, 765).
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 12, 1934[1] (657).

371. **Alaria esculenta** (L.) Greville, Algae Britannicae, p. 25, Pl. IV (1830).

Of this Alga there was again merely an assortment of large fragments, the specimens having been broken in transit.

General Distribution. Greenland, Atlantic North America, Iceland, the Faeröe Islands, Spitsbergen, Norway.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 14, 1934[1] (764).
3. S. BAFFIN: *Pond Inlet,* Polunin Sept. 12, 1934[1] (658).
7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936 (2625).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 25, 1934[1] (165).

FUCACEAE

372. **Fucus evanescens** Agardh, Spec. Alg. I, p. 92 (1823).

Good fruiting plants were collected at Lake Harbour.

General Distribution. Circumpolar, especially northern Atlantic coasts of Europe and America.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26-8, 1936 (1123).

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[1] *See* footnote (¹) on previous page. (N.P.)

373. **Fucus vesiculosus** L., Species Plantarum ed. 1, p. 1158 (1753).

Many specimens of this extremely variable species were included in Dr. Polunin's material.

General Distribution. Circumpolar.

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 16-17, 1934[1] (876).
3. N. Baffin: *Pond Inlet,* Polunin Sept. 12, 1934[1] (698).
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936 (2592); *Pangnirtung,* Polunin Sept. 3-5, 1934[1] (468, 469), also Polunin Sept. 19-20, 1936 (2612, 2614).
5. S. Baffin: *Lake Harbour,* Polunin July 26-8, 1936 (1144, 1145, 1154).
7. N. Labrador: *Burwell,* Polunin July 23-5, 1936 (1081).
8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936 (1434, 1472).
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin 1934, 1936, and 1946—field notes.

374. **Ascophyllum nodosum** Le Jolis, Liste des Algues marines de Cherbourg, p. 96, Pls. XVIII-XX (1863).

There were two large specimens and many small fragments of this familiar plant.

General Distribution. Circumpolar.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin Sept. 25, 1936 (2626).

RHODOPHYCEAE

Squamariaceae

375. **Petrocelis cruenta** J. G. Agardh, Species, genera, et ordines Alg. II, p. 490 (1851).

A single fruiting specimen was brought back.

General Distribution. Northern Europe, northern North America.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 30, 1936, in saltwater pools (96).

376. **Hildbrandtia**[2] **prototypus** Nardo, Isis, VI-VII, p. 675 (1834).

General Distribution. Circumpolar.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 20, 1936, forming a red-brown investment on rocks, near low-tide level (187).

Corallinaceae

377. **Lithothamnion** (? *glaciale* Kjellman, Alg. Arctic Sea, p. 93, Pls. II-III (1883)).

A few small fragments of a species belonging to this genus were included in one vial. They were noted as forming brown and pink patches on stones in the bottom of a tidal pool at Pangnirtung (Polunin Sept. 20, 1936).

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[1] *See* footnote (1) on p. 116. (N.P.)

[2] This generic name has been very variously spelled—cf. De Toni, Sylloge Algarum, vol. IV, p. 1714 (1905). (N.P.) Now Dr. Whelden has been kind enough to look up the original for me and writes (*in litt.*) "Nardo.... spelled his genus Hildbrandtia, after Dr. Hildbrandt. The name occurs three times, all so spelled, but whoever did the indexing has it *Hildebrandtia*". (N.P., November 1946.)

DELESSERIACEAE

378. **Delesseria sinuosa** Lamouroux, Ann. Mus. d'Hist. Nat., XX, p. 124 (1813).

General Distribution. Circumpolar.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 12, 1934[1] (657).

RHODOMELACEAE

379. **Polysiphonia fastigiata** Greville, Flora Edinburgh, p. 308 (1824).

Only small pieces of this plant were brought back.

General Distribution. Northern Europe and northern Atlantic and Arctic America.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 20, 1936.

CERAMIACEAE

380. **Rhodochorton rothii** Nägeli, Sitz. Akad. Wissen. München, II, p. 355 (1861).

All the specimens examined contained tetraspores.

General Distribution. Northern Europe, northern North America.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936, on rocks at mid-tide level (35).

GIGARTINACEAE

381. **Ahnfeltia plicata** (Hudson) Fries, Corpus Florarum Provincialium Sueciae, I. Floram Scanicam, p. 310 (1835).

A plant commonly reported from this region.

General Distribution. Circumpolar.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 14, 1934[1] (764).
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 12, 1934[1] (660).

RHODYMENIACEAE

382. **Halosaccion ramentaceum** (L.) J. G. Agardh, Species, genera, et ordines Alg. II, p. 358 (1851).

General Distribution. Coasts of North America.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 19-20, 1936 (2615).

383. **Rhodymenia palmata** (L.) Greville, Algae Britannicae, p. 93 (1830).

General Distribution. Circumpolar.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936 (2625).

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[1] *See* footnote (¹) on p. 116. (N.P.)

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PLATE I[1]

Figure 1. *Oncobyrsa cesatiana* Rabenhorst
Figure 2. *Gloeocapsa compacta* Kütz.
Figure 3. *Merismopedia minima* G. Beck
Figure 4. *Gomphosphaeria aponina* Kütz.
Figure 5. *Lyngbya nana* Tilden
Figure 6. *Scytonema crustaceum* Agardh
Figure 7. *Lyngbya rigidula* (Kütz.) Hansgirg
Figure 8. *Schizothrix calcicola* (Agardh) Gomont
Figure 9. *Calothrix contarenii* (Zan.) Bornet & Flahault
Figure 10. *Tolypothrix bouteillei* (Bréb. & Desm.) Lemmerm.
Figure 11. *Tolypothrix tenuis* Kütz. f. *minor* n. forma

Figures 6 and 8 showing habit are drawn to scale *b;* all other figures are to scale *a.*

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[1] All figures have been drawn with the aid of a *camera lucida.* Scales of magnification are included in each plate (R.M.W.). As explained in the footnotes on pp. 28, 34, 52, and 61, some of the citations used in these lists of algal figures, and in the Summary, are illegal though still in common use. (N.P.)

PLATE I

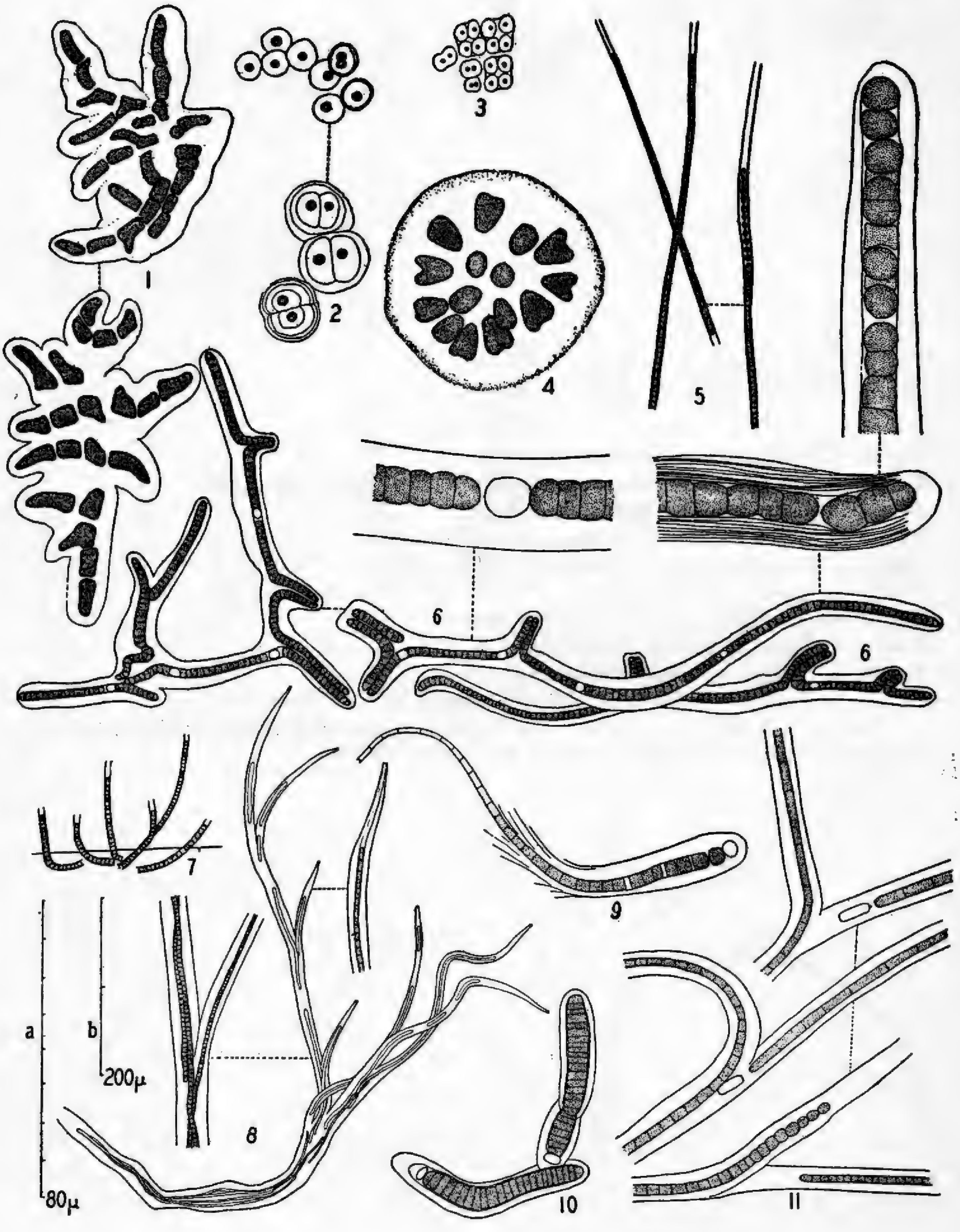


PLATE II

Figure 1. *Clastidium cylindricum* n. sp.
Figure 2. *Chamaesiphon incrustans* Grunow var. *elongatus* Starmach
Figure 2a. *Chamaesiphon incrustans* Grunow
Figure 3. *Chamaesiphon cylindricus* Boye Petersen
Figure 4. *Lyngbya pusilla* (Rabenhorst) Hansgirg
Figure 5. *Calothrix borealis* n. sp.
Figure 6. *Lyngbya lagerheimii* (Möb.) Gomont
Figure 7. *Lyngbya subtilis* W. West
Figure 8. *Nostoc kihlmani* Lemmerm.
Figure 9. *Plectonema tomasinianum* Bornet var. *gracile* Hansgirg

Figures 1, 3, and 4 are drawn to the 20μ scale, figures 5, 8, and 9 showing habit are to the 200μ scale; all other figures are to the 30μ scale.

PLATE II

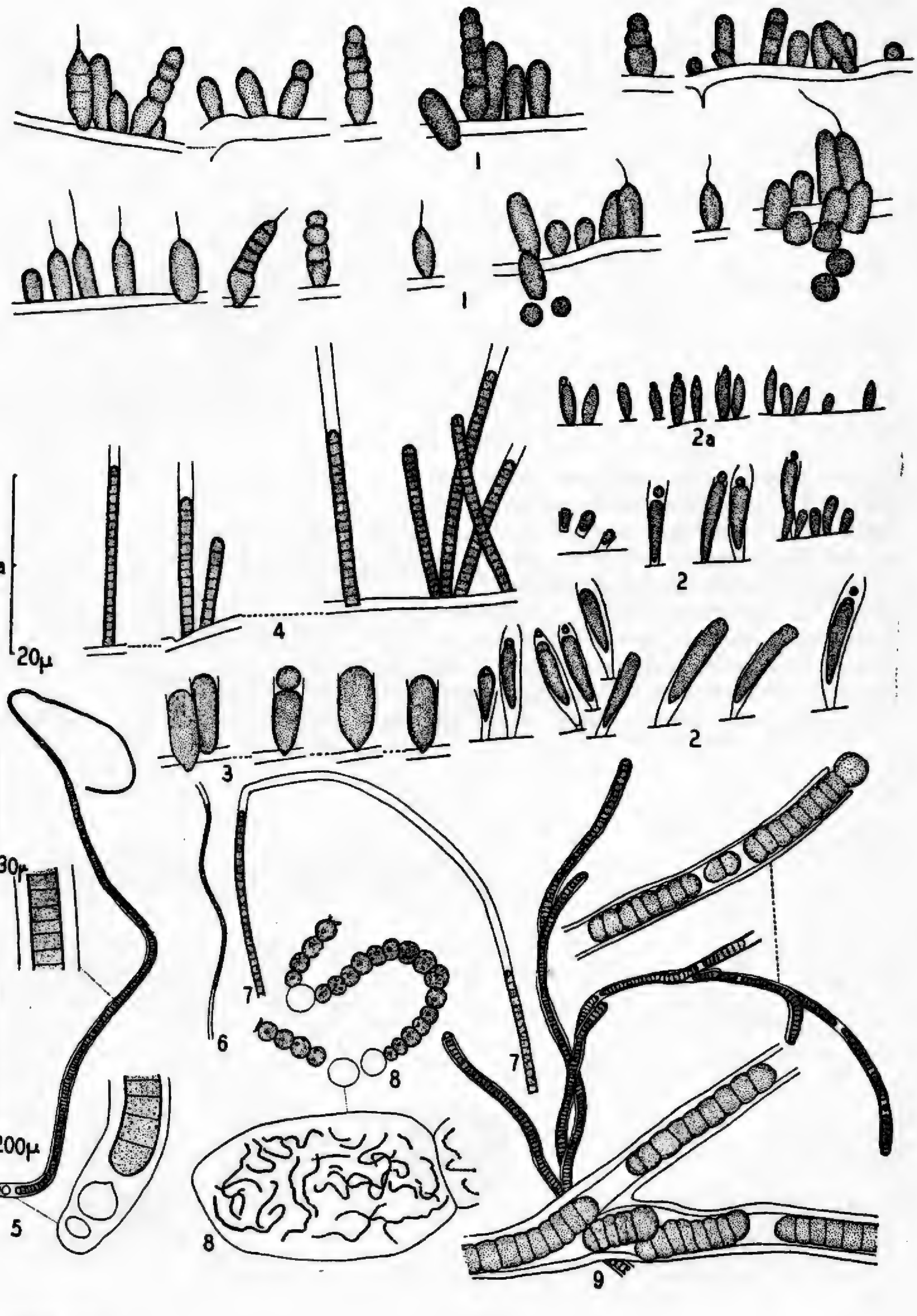


Plate III

Figure 1. *Dinobryon marchicum* Lemmerm.
Figure 2. *Aphanocapsa arctica* n. sp.
Figure 3. *Cosmarium quadratum* Ralfs f. *willei* W. & G. S. West
Figure 4. *Schizothrix braunii* (A. Br.) Gomont
Figure 5. *Closteriopsis brevicula* n. sp.
Figure 6. *Zygnema cyanospermum* Cleve
Figure 7. *Cosmarium subundulatum* Wille
Figure 8. *Rivularia minutula* (Kütz.) Bornet & Flahault var.
Figure 9. *Dinobryon tabellariae* (Lemmerm.) Pascher
Figure 10. *Cosmarium depressum* (Nägeli) Lundell var. *achondrum* (Boldt) W. & G. S. West

PLATE III

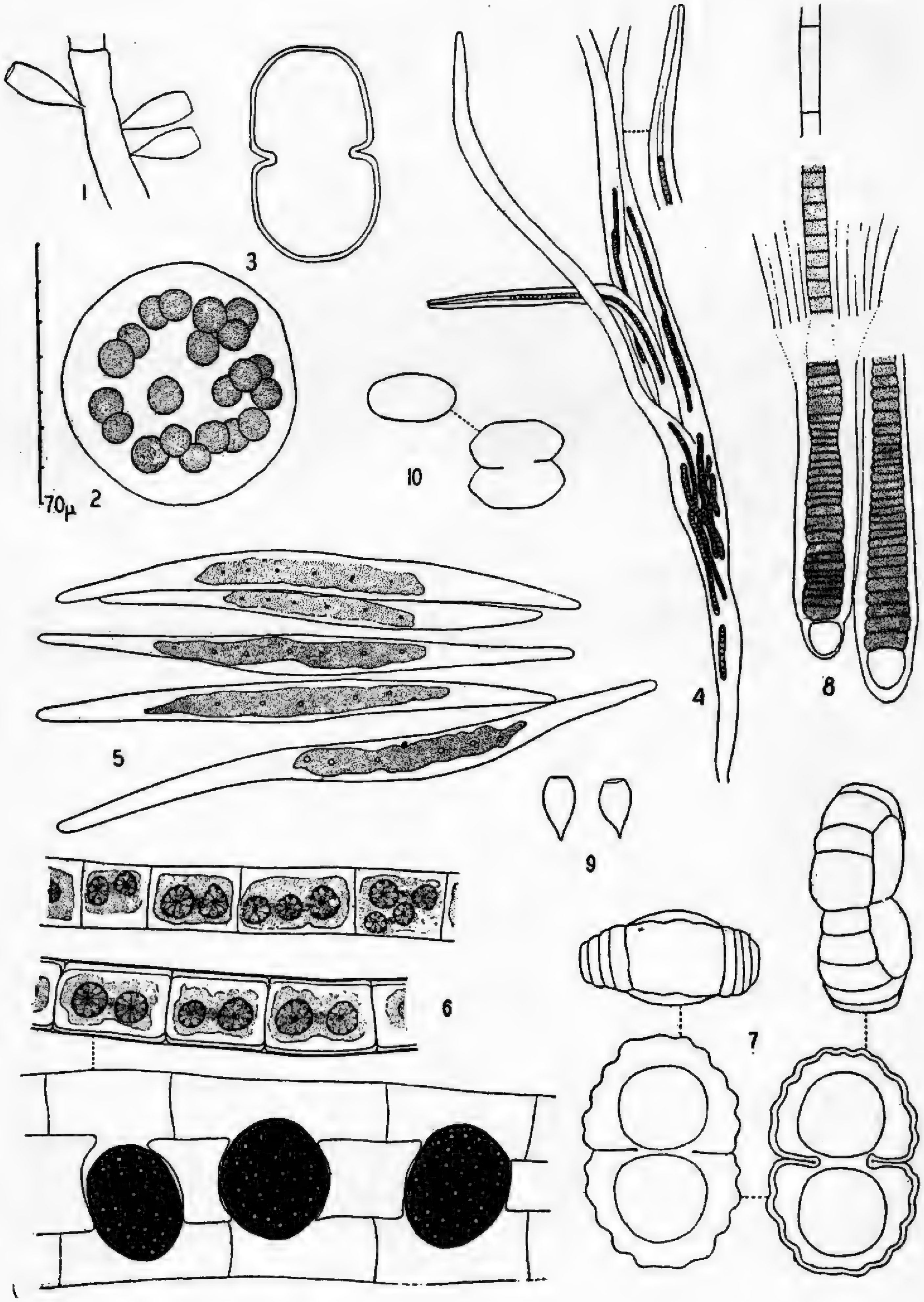


PLATE IV

Figure 1. *Oocystis naegelii* A. Br.

Figures 2-15. Specimens of *Oocystis* from a single vial. All plants were growing on the surface of a dead leaf and were confined to a small area. The collection was *Polunin* 1936 No. 131 from a lake at Arctic Bay (*See* p. 56).

PLATE IV

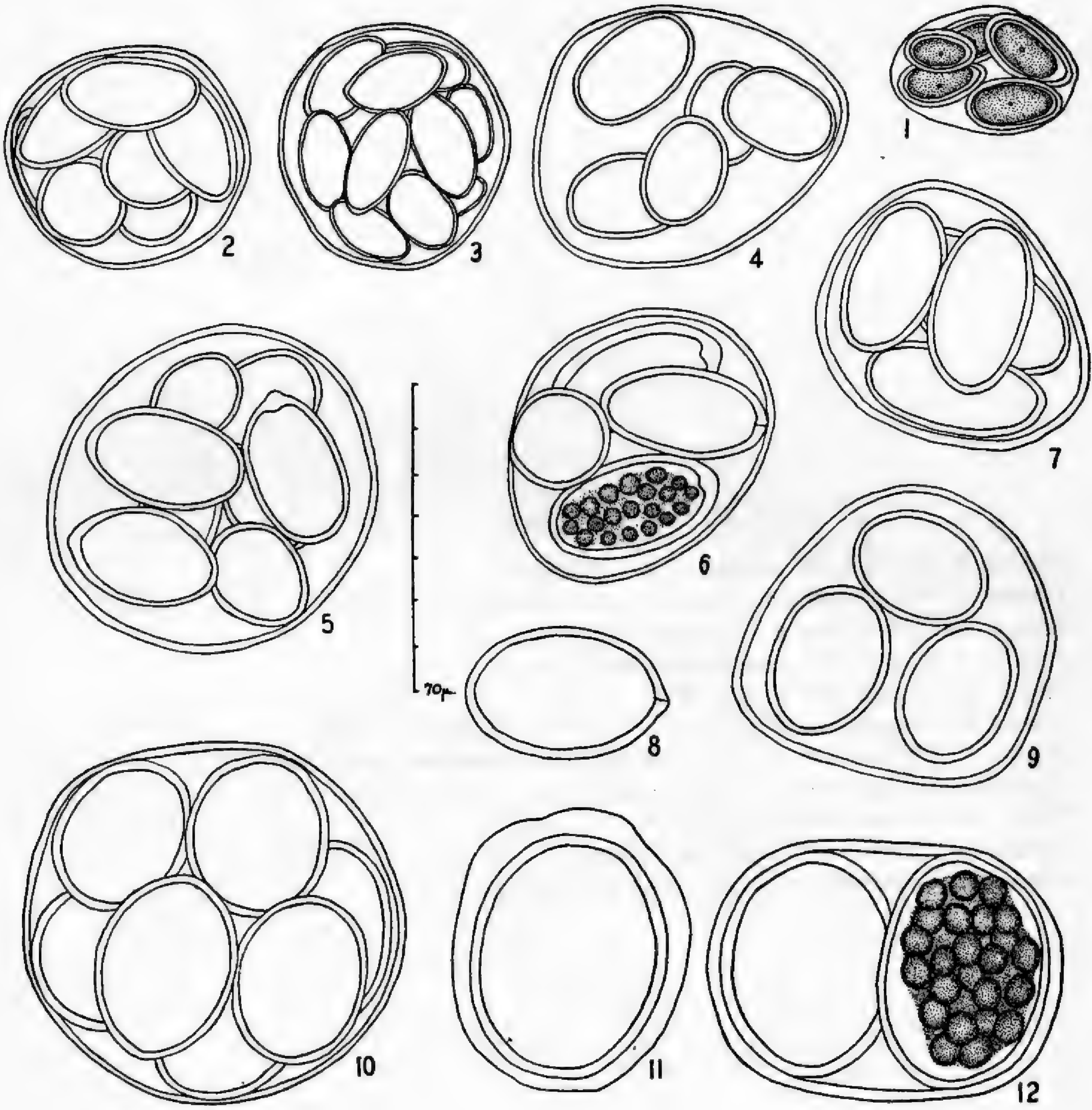


Plate V

Figure 1. *Cosmarium parvulum* de Brébisson
Figure 2. *Closterium jenneri* Ralfs var. *robustum* G. S. West
Figure 3. *Cosmarium triselionatum* n. sp.
Figure 4. *Cosmarium paucigranulatum* n. sp.
Figure 5. *Cosmarium holmii* Wille
Figure 6. *Cosmarium porkornyanum* (Grun.) W. & G. S. West
Figure 7. *Cosmarium cyclicum* Lundell var. *arcticum* Nordstedt
Figure 8. *Cosmarium cyclicum* Lundell var. *crassum* n. var.
Figure 9. *Cosmarium poluninii* n. sp.
Figure 10. *Cosmarium holmiense* Lundell
Figure 11. *Cosmarium subhieronymusii* n. sp.

PLATE V

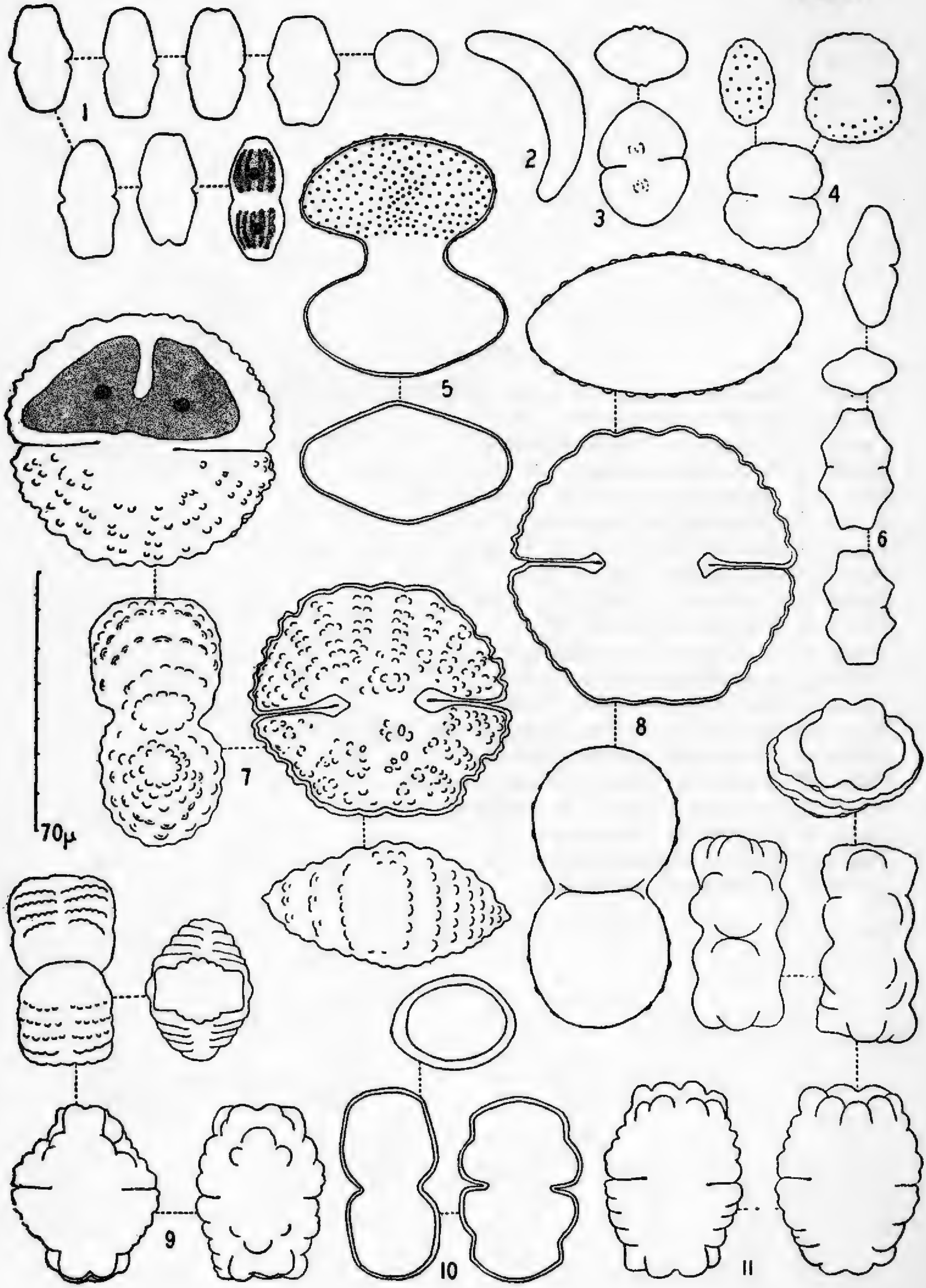


Plate VI

Figure 1. *Euastrum montanum* W. & G. S. West
Figure 2. *Cosmarium baffinensis* n. sp.
Figure 3. *Cosmarium arctoum* Nordstedt
Figure 4. *Cosmarium coarctatum* W. West
Figure 5. *Arthrodesmus ralfsii* W. West
Figure 6. *Cosmarium medioplanum* n. sp.
Figure 7. *Staurastrum compactum* n. sp.
Figure 8. *Staurastrum vestitum* Ralfs
Figure 9. *Cosmarium isthmium* W. West
Figure 10. *Euastrum turneri* W. West
Figure 11. *Staurastrum subvarians* n. sp.
Figure 12. *Staurastrum brachiatum* Ralfs
Figure 13. *Staurastrum alternans* de Brébisson
Figure 14. *Staurastrum varians* Raciborski var. *badense* Schmidle
Figure 15. *Staurastrum glabrum* (Ehrenb.) Ralfs
Figure 16. *Staurastrum pachyrhynchum* Nordstedt
Figure 17. *Staurastrum avicula* de Brébisson
Figure 18. *Staurastrum inconstans* n. sp.
Figure 19. *Staurastrum baffinensis* n. sp.
Figure 20. *Staurastrum gratum* n. sp.

Plate VI

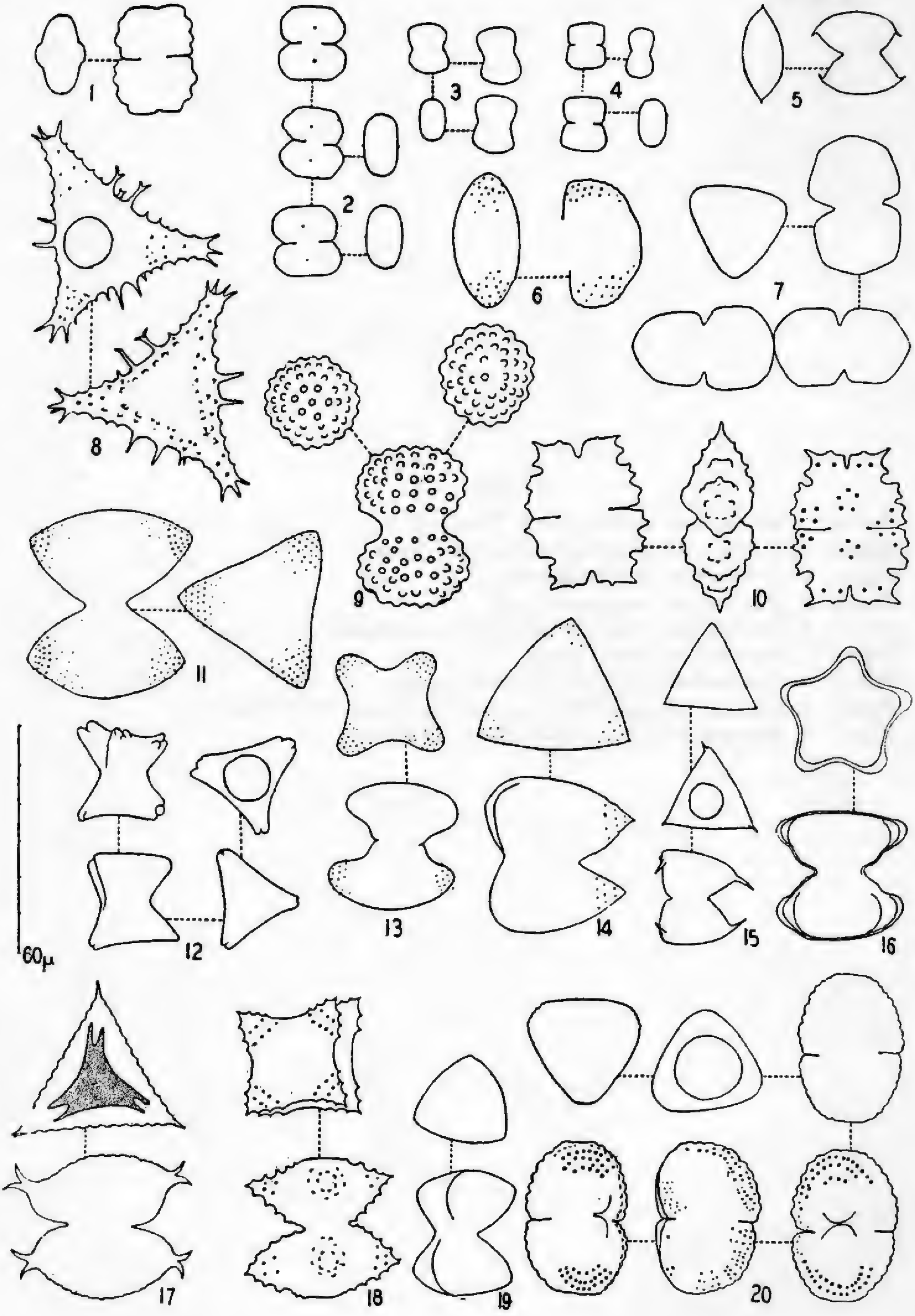


PLATE VII

Figure 1. *Staurastrum rhabdophorum* Nordstedt
Figure 2. *Staurastrum granulosum* (Ehrenb.) Ralfs
Figure 3. *Staurastrum meriani* Reinsch
Figure 4. *Staurastrum inornatum* n. sp.
Figure 5. *Staurastrum furcatum* (Ehrenb.) de Brébisson
Figure 6. *Staurastrum dickiei* Ralfs
Figure 7. *Staurastrum cristatum* (Nägeli) Archer
Figure 8. *Staurastrum forficulatum* Lund. var. *longicornis* Schmidle
Figure 9. *Staurastrum proboscidium* (Bréb.) Archer

PLATE VII

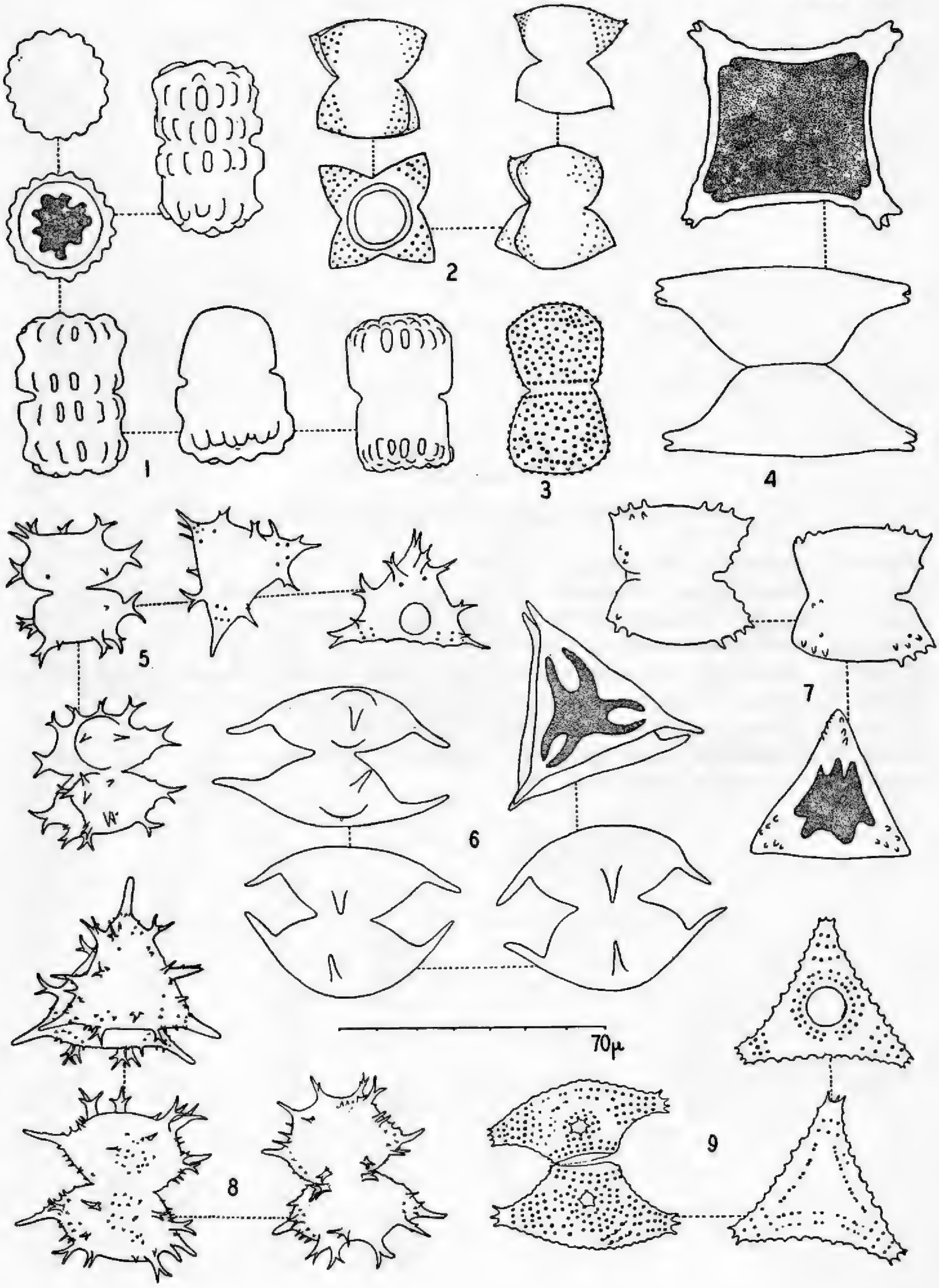
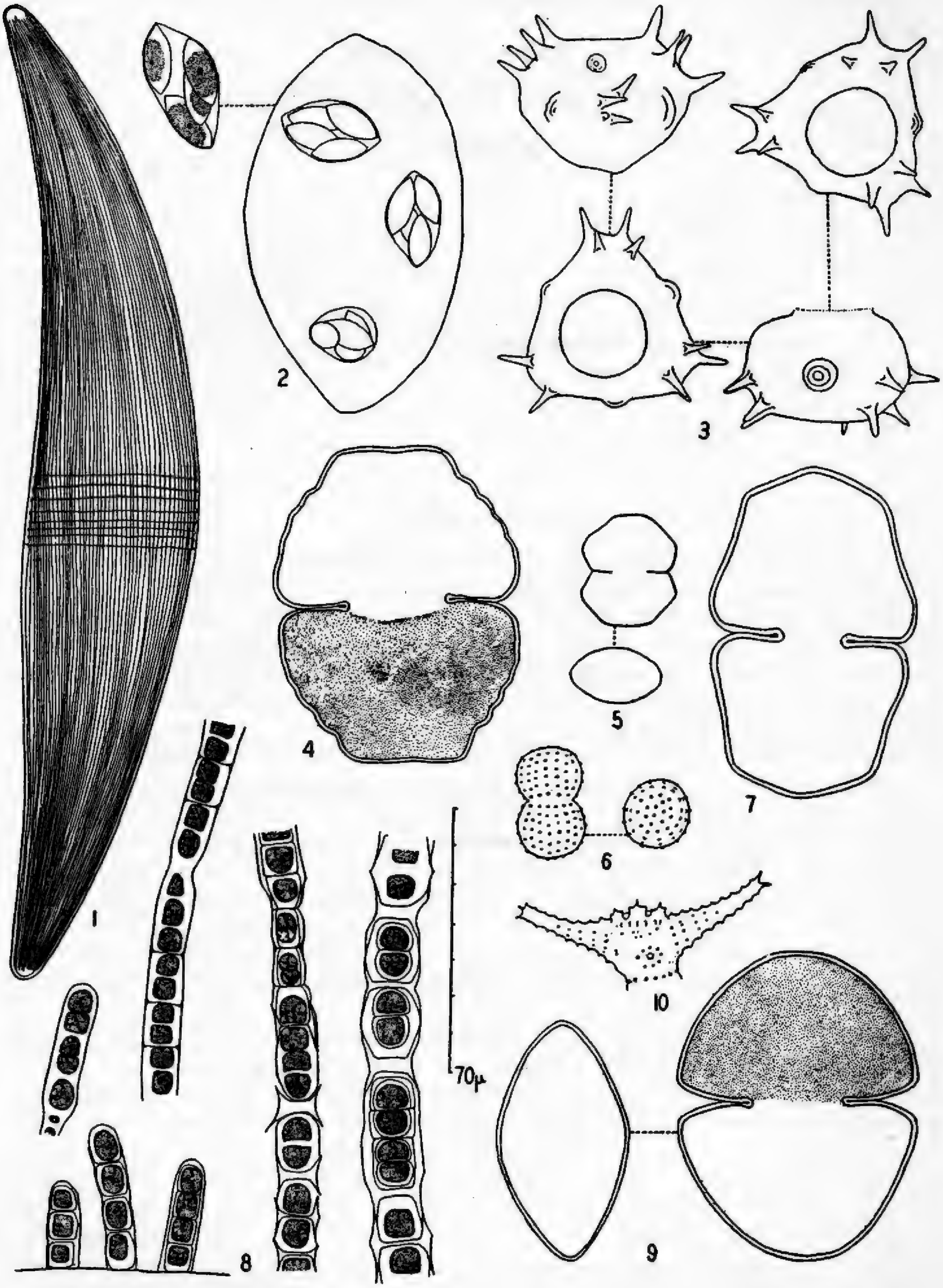


Plate VIII

Figure 1. *Closterium ehrenbergii* Meneghini var. *malinvernianum* (De Not.) Rabenhorst
Figure 2. *Oocystis gloeocystiformis* Borge
Figure 3. *Xanthidium antilopaeum* (Bréb.) Kütz. var. *triquetrum* Lundell
Figure 4. *Cosmarium cymatopleurum* Nordstedt
Figure 5. *Cosmarium sexangulare* Lundell
Figure 6. *Cosmarium subexcavatum* W. & G. S. West var. *ordinatum* W. & G. S. West
Figure 7. *Cosmarium plicatum* Reinsch var. *hibernicum* W. West
Figure 8. *Microspora pachyderma* (Wille) Lagerheim
Figure 9. *Cosmarium ralfsii* Bréb. var. *montanum* Raciborski
Figure 10. *Staurastrum natator* W. West

PLATE VIII



2. MARINE PHYTOPLANKTON

By Gunnar Seidenfaden

Botanical Museum, Copenhagen, Denmark

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INTRODUCTION[1]

The chief difficulties encountered in compiling a list of the phytoplankton species of the Canadian Eastern Arctic are of two kinds. First, it is difficult to define what should strictly be referred to phytoplankton—especially in the Arctic where a number of species are associated with the pack-ice and may be carried by this far into the open sea, there to become of no small importance in the composition of the plankton. Second, it is impossible to draw a natural boundary for our area when we are concerned merely with organisms living in the waters surrounding it.

With regard to the first difficulty I have, in accordance with a personal estimate, included all such species as are present in samples collected by up-to-date methods; however from earlier collections, at least when nothing is stated about the method of collection, I have only included such forms as might be supposed to occur more or less frequently in the form of plankton. As regards geographical delimitation I have, when considering material collected by expeditions that worked partly outside our area, merely included records from such distances from the coast as I found natural in each particular case.

Below will be given a brief account of each of the collections and publications that have been concerned with Marine Phytoplankton in or near the Canadian Eastern Arctic. These items, corresponding to separate expeditions, will be placed in chronological order; besides historical remarks there will be mentioned under each expedition the number of visited localities that fall within our area and can thus be considered in the present report. These remarks, and also the list of species that follows, are based largely on a paper currently in the press (*Meddelelser om Grønland*) and dealing in a similar manner with the collections made during the Danish *Godthaab* Expedition of 1928 (*See* Grøntved and Seidenfaden 1938). For further information about the individual species, especially concerning their occurrence in the waters immediately adjacent to our area, reference may be made to that work.

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[1] Almost immediately after completing this paper Mr. Seidenfaden left on a fresh expedition to Spitsbergen and northeastern Greenland. I was, consequently, unable to obtain his approval of some changes that seemed desirable, especially in the introduction to his paper. On the advice of the appropriate specialists in the British Museum I have, however, taken the liberty of publishing my revised version. As with the other papers, it differs from the original manuscript in little more than the arrangement and wording of some of the phrases. (N.P.)

As has been mentioned above, we lack precise information as to how the earlier collections of Eastern Arctic phytoplankton were secured. In most cases the collections must be supposed to have been from the coastal zone, consisting as they did of diatoms affixed to or occasionally taken in company with larger Algae, or of brown diatom-assemblages occurring among drifting ice. Actual collections of plankton with fine nets were not made until the end of last century. However, some few earlier expeditions, in whose collections plankton species are represented, may be mentioned.

(1) At the request of Prof. Dickie, of Aberdeen, P. C. Sutherland, who joined one of the Franklin search expeditions in 1850-51 as a ship's surgeon, directed his attention to "the colouring matters of ice and sea water." Sutherland's collections for the elucidation of these questions were worked up by Dickie (1852, pp. cxcv *et seq.*) and Ehrenberg (1853, pp. 522 *et seq.*). Two of the samples were derived from our area, viz.: (1) from Wellington Channel, at 75° 42′ north latitude and about 92° west longitude on the coast of Devon Island ("taken from the surface of the hummocky ice . . . May 1850"[1]); and (2) from the entrance to Assistance Bay, Cornwallis Island, 74° 36′ north latitude and 94° 21′ west longitude ("detritus from a glass-tube containing brown algae, July 12, 1851"). Only a few plankton species are represented in Sutherland's samples.

(2) The Diatoms collected on the M'Clintock expedition of 1857-9 were examined by O'Meara (1860, p. 59). As a more accurate statement of the locality of the species is not available, records from this expedition are not included in the subjoined list.

(3) From Nares's expedition of 1875-6 to Ellesmere and northwestern Greenland, the surgeon of H.M.S. *Alert,* Edward L. Moss, mentions (1879, pp. 125 *et seq.*) for the first time Dinoflagellatae from these regions; but as he gives no accurate statements of the localities we must likewise disregard these particulars (cf. Grøntved and Seidenfaden 1938). However, from Nares's expedition there is available another series of collections of diatoms, examined and described by Dickie (1880, p. 9) and Cleve (1884, p. 313). The positions of the 23 localities within our area from which marine plankton material was collected by this expedition are indicated on the accompanying map (Figure 2, cf. also the list on p. 143). The collections comprise a great number of diatoms, of which only such have been included in our list as can be assumed to occur in plankton. Some few of the samples secured by this expedition seem to have been collected in the middle of Smith Sound or the channel to its north (e.g., Nos. 12, 15, and 22); others were taken at some distance from the shore, but are stated to be bottom samples (e.g., Nos. 1, 11, 17, and 20 in the list).

(4) The first actual plankton samples collected by nets within our area were taken in 1894 by a Swedish explorer Nilsson. The Diatomeae contained in these samples were worked up by Cleve (1896) and the

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[1] Evidently a misprint for 1851.

Dinoflagellatae by Aurivillius (1896, pp. 179 *et seq.*). The latter gives accurate positions for the 24 samples derived from our area; unfortunately, however, neither he nor Cleve gave detailed information about the contents of the individual samples, so the data can only be utilized collectively. Nevertheless, Nilsson's collections constitute the first important contribution to our knowledge of the plankton flora of the central parts of our area. The samples were collected partly at a short distance off the northeast coast of Baffin in the period July to September, partly in Davis Strait and Cumberland Gulf in October. In addition to these plankton samples, Cleve treats a collection from the ice near Cape Eglinton (70° 42′ north latitude, 69° 29′ west longitude); this collection, too, contains a number of plankton organisms, even though most of the forms are associated with the ice.

(5) The Second *Fram* Expedition of 1898-1902, which made so many valuable contributions to our knowledge of the flora of the area, unfortunately brought back only one collection of plankton. This came from the central part of Smith Sound, outside the natural boundary of our area, so the records are not included in the present list of species (cf. Grøntved and Seidenfaden 1938, table 28).

(6) In 1924 the Norwegian research ship *Michael Sars* made investigations in the waters west of Greenland. In a transect across Davis Strait our area was touched upon, when the ship paid a visit to Exeter Sound. The somewhat artificial boundary determining which of the stations of the *Michael Sars* Expedition should be included in our list has been drawn in about the middle of Davis Strait; thus, five of the stations are included (original numbers, 42-46; our numbers 65-69 on Figure 2 and in the list). The plankton samples were collected and examined by Gran (1929), who accomplished the most detailed quantative investigations that have so far been made in our area.

(7) In 1926 a number of plankton samples were collected along the northeast coast of Labrador by Iselin (cf. 1930). However, as none of his collections were made north of 60 degrees north latitude they cannot be included in our list; but they are mentioned here because hardly any of the forms recorded by him are lacking at the entrance to Hudson Strait (cf. Iselin 1930, pp. 27-9, and Grøntved and Seidenfaden 1938, table 6[1]).

(8) In 1928 the *Godthaab* Expedition, which I joined as botanist, made collections throughout the waters west of Greenland. The results are published in a paper by Grøntved and Seidenfaden (1938). As was the case with the material collected in a traverse of Davis Strait by Gran, the distinction as to which of the samples can be said to be derived from our area must in many respects be artificial, and on the whole I regard it as probable that all the species mentioned in the said paper may be met with in our area. With the delimitation selected here, the list will contain records from the westernmost stations of the *Godthaab* expedition, as shown in the list of localities and in the map (Figure 2). Whereas the plankton samples collected by earlier expeditions were all of them taken as surface hauls, those of the *Godthaab* Expedition and Gran's collections in addition contain vertical hauls from different depths; moreover, they supply informa-

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[1] In this latter work the nomenclature is in accordance with our list.

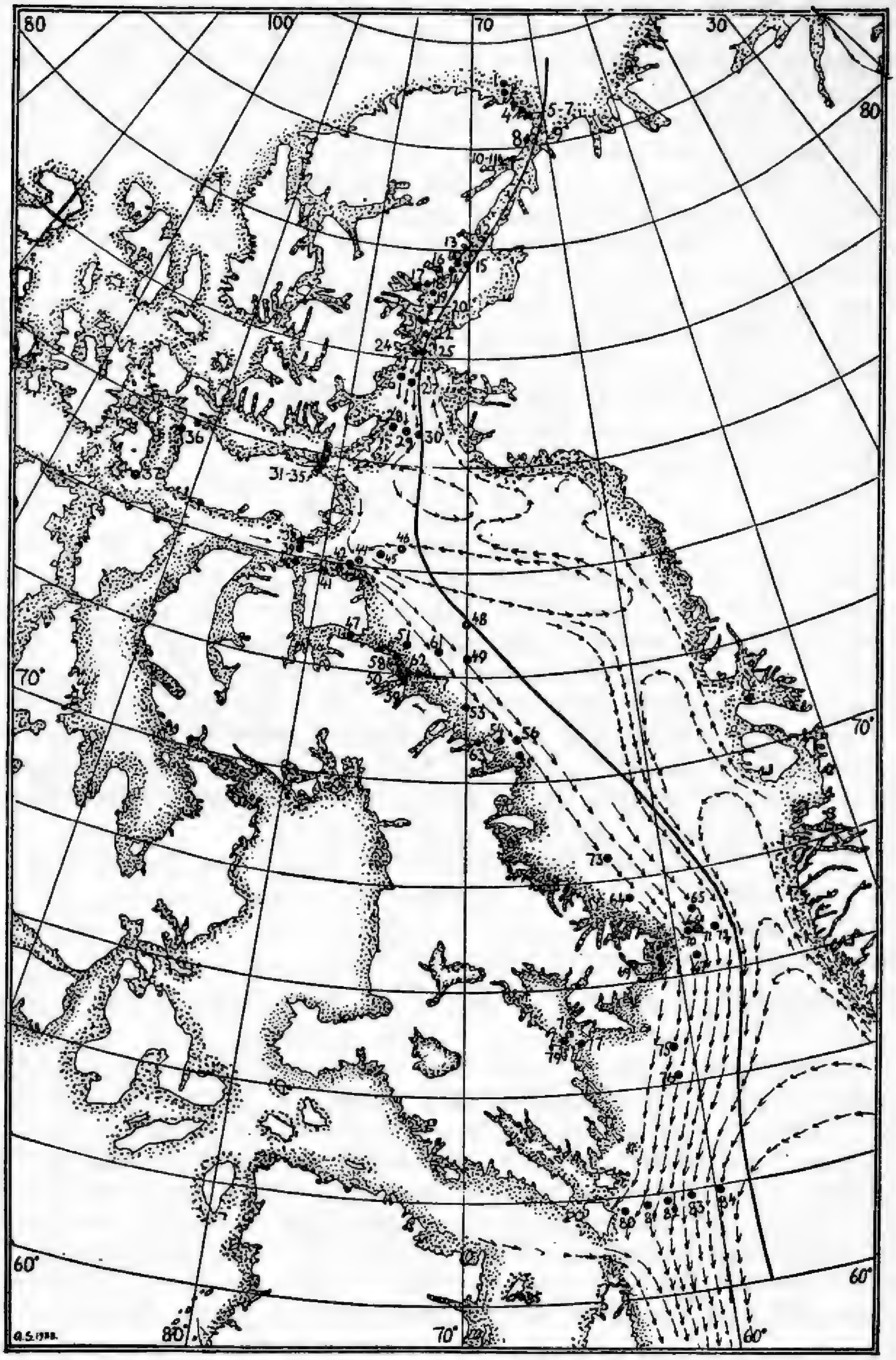

Figure 2. Sketch-map showing the situation of the localities (cf. list on pages 143-5). By the arrows are indicated the dominant currents, so far as they are known (*See* Conclusion, pages 173-6 and cf. Grøntved and Seidenfaden 1938, fig. 81).

tion as to the temperature and salinity of the different layers of water. However, it seems unnecessary to repeat such data here, when reference can be made to the original works (Gran 1929, and Grøntved and Seidenfaden 1938). For a complete list of all the species found in the samples from varying depths at each station of Gran and the *Godthaab* Expedition, reference can likewise be made to these papers.

(9) More recent than the collections of the *Godthaab* Expedition are, finally, Dr. Nicholas Polunin's samples resulting from both horizontal and vertical hauls taken off the coast of Akpatok Island in Hudson Strait. A list of the species found here was published by him (1934, p. 201), followed by an ecological account (Polunin 1935, pp. 189-90).[1]

I am greatly indebted to Dr. Polunin for sponsoring the present paper and for his kind invitation to give room for it in the "Botany of the Canadian Eastern Arctic". My collaborator in the publication of the *Godthaab* material, Mag.Sc. Julius Grøntved, has in some instances helped me with the preparation of the present list; for this I also wish to express my most cordial thanks.

LIST OF LOCALITIES

The list of species that forms the main body of this paper is based upon collections from altogether 85 localities.[1] As most of these are in the open sea and different from those dealt with in the other papers of the series, it has been thought necessary to give by means of a map (Figure 2) and the subjoined table a detailed survey of the positions of these plankton localities. In compliance with the wish of Dr. Polunin, and in order that the various papers should agree, the Eastern Arctic area was subdivided into the usual ten major districts, in spite of the fact that investigations of the marine plankton have only been made in or near six of them, viz.,

1. Ellesmere (including Smith Sound).
2. Devon, etc., Islands (including Jones Sound and Lancaster Sound).
3. N. Baffin.
4. C. Baffin.
5. S. Baffin.
9. Islands in Hudson, etc., Bays (in this paper cited as Hudson Strait[2]).

Explanation of Table. In the first column are given the geographical subdivisions, generally delimited and numbered as in the rest of the series.[3] The numbers in column 2 are those of the localities, as seen in Figure 2, and as used in the list of species. The dates are given as exactly as possible; unfortunately some expeditions gave no dates. In the column headed "Remarks", the method in which the samples were made is briefly stated, when known. Thus "Floe ice" means that small, slimy substances on the ice have been collected. "Net samples" are made with the usual silk nets, partly as surface hauls (surf.), partly as vertical hauls

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[1] Until very recently we overlooked the report by Davidson (1931) on "The Planktonic Diatoms in Hudson Bay", and although it is too late to include details of localities and individual records I am taking the liberty of inserting references to those that appear to substantiate Mr. Seidenfaden's reports. In addition, Davidson reports from the northern parts of Hudson Bay *Rhizosolenia shrubsolii* Cleve, *Rhizosolenia stolterfothii* H. Peragallo, *Thalassionema nitschioides* (Grun.) Hustedt (sub. syn. *Thalassiothrix nitschioides*, and, more tentatively, *Coscinodiscus concinnus* W. Smith, which appear to be new to our area. (N.P., October 1946.)

[2] Or, when necessary, Hudson Bay—*See* footnote (1) on this page.

[3] The five most southerly localities lying off the northeast coast of Baffin (Nos. 53, 54, 55, 56, and 63) have unfortunately, unless given alone, because of Cleve's lack of specification (*See* next paragraph), had to be cited here as belonging to N. Baffin, whereas the adjacent mainland is in the other papers counted as belonging to C. Baffin. (N.P.)

District	No., cf. Fig. 2	Date	N. lat.		W. long.		Place	Remarks	Orig. No.	Col-lector
			°	′	°	′				
1. Ellesmere	1	1875–6	83	19	ab. 64°		Polar Sea, N. of C. Colan	Bottom sample, 144 m	29	Na
	2	"	83	01	"		" "	Coloured ice	28	Na
	3	"	82	35	ab. 63		Simmons Island	Floe ice	26	Na
	4	"	82	28	ab. 62		Mushroom Point	High-water mark	25	Na
	5	"	82	27	61°	30′	Floeberg Beach	On Algae	24	Na
	6	"	"		"		*Alert* winter quarters	In round pellets in ice	22	Na
	7	"	"		"		" "	?	20	Na
	8	"	82	05	62	30	Lincoln Bay	Floe ice	19	Na
	9	"	82	—	ab. 62		Robeson Channel	On ice	18	Na
	10	"	81	41	ab. 65		Distant Discovery Bay	On ice-foot	15	Na
	11	"	"		"		" "	On bottom	14	Na
	12	"	80	30	ab. 66		Kennedy Channel	From surface	12	Na
	13	"	79	45	ab. 71		Cape John Barrow	Frozen in ice	10	Na
	14	"	"		71	30	Near Cape Frazer	?	11	Na
	15	"	"		ab. 70		Hayes Sound	On bottom, 240 m	5	Na
	16	"	79	40	ab. 74		Dobbin Bay	"Floating"	9	Na
	17	"	79	25	ab. 75		Franklin Pierce Bay	Bottom sample	8	Na
	18	"	"		74	30	Near Cape Prescott	?	7	Na
	19	"	79	20	ab. 74		Off Victoria Head	?	6	Na
	20	"	78	57	"		Smith Sound	Bottom, 420 m	4	Na
	21	"	78	44	"		"	Floe ice	2	Na
	22	"	ab. 78		"		"	"Green water"	3	Na
	23	"	78	40	ab. 75		Cape Sabine	?	1	Na
	24	8/8 1928	78	14	74	10	Off Cape Isabella	Net sample, surface	99	Go
	25	" "	78	16	73	41	" "	" " vert. 50–0 m	98	Go
	26	9/8 "	77	44	75	56	Off Cape Faraday	" " vert. 50–0; 150–50	101	Go
	27	" "	77	34	74	32	" " "	" " vert. 50–0	102	Go
	28	16/8 "	76	40	76	20	" Clarence Head	" " surf., vert. 75–0	114	Go
	29	" "	76	38	75	22	" " "	" " " " 50–0	113	Go
	30	" "	76	37	74	18	" " "	" " vert. 100–0	112	Go
2. Devon, etc., Islands	31	17/8 "	76	08	80	53	Mouth of Jones Sound	" " surf., vert. 65–0	116	Go
	32	" "	76	05	80	56	" "	" " " 200–0	117	Go
	33	" "	76	00	80	59	" "	" " vert. 200–0	118	Go
	34	" "	75	54	81	01	" "	" " " "	119	Go
	35	" "	75	49	81	04	" "	" " surface	120	Go
	36	May 1851	75	42	91	20	Wellington Channel	Surf. of hummocky ice		Su
	37	12/7 "	74	36	94	21	Entr. Assistance Bay	On bottom Algae		Su
	38	19/8 1928	74	27	81	50	Mouth of Lancaster Sound	Net sample, surface	122	Go
	39	" "	74	23	81	54	" " "	" " "	123	Go
	40	20/8 "	74	03	82	02	" " "	" " "	126	Go

District	No., cf. Fig. 2	Date	N. lat. ° ′	W. long. ° ′	Place	Remarks	Orig. No.	Col-lec-tor
3. N. Baffin........	41	24/8 1894....	73 40	80 00	Near Cape Liverpool..........	Net sample, surface..........	......	Ni
	42	21/8 1928....	74 01	78 22	Off Bylot Island..........	" " surf., vert. 150–0..........	129	Go
	43	22/8 "	74 05	77 50	" "	" " " " 200–0..........	130	Go
	44	" "	74 12	77 00	" "	" " " " 150–0..........	131	Go
	45	" "	74 20	75 56	" "	" " vert. 150–0..........	132	Go
	46	" "	74 26	74 23	" "	" " surface..........	133	Go
	47	2/9 1894....	72 38	77 10	Pond Inlet..........	" " "	......	Ni
	48	8/7 "	73°–74°	ab. 70	Baffin Bay..........	" " "	......	Ni
	49	21/7 "	72°–73°	"	"	" " "	......	Ni
	50	22/7 "	72 00	70 00	"	" " "	......	Ni
	51	27/7 "	....	....	E. of Cape Weld..........	" " "	......	Ni
	52	29/7 "	....	....	E. of Coutts Inlet..........	" " "	......	Ni
	53[1]	31/7 "	....	....	E. of Cape Adair[1]..........	" " "	......	Ni
	54[1]	1/8 "	....	....	E. of Cape Eglinton[1]..........	" " "	......	Ni
	55[1]	2/8 "	....	....	E. of Cape Christian[1]..........	" " "	......	Ni
	56[1]	7/8 "	....	....	SE. of Cape Eglinton[1]..........	" " "	......	Ni
	57	9/8 "	....	....	E. of Coutts Inlet..........	" " "	......	Ni
	58	6/9 "	72 12	74 15	Off NE. coast of Baffin......	" " "	......	Ni
	59	18/9 "	71 52	73 47		" " "	......	Ni
	60	20/9 "	72 15	74 32		" " "	......	Ni
	61	21/9 "	72 30	71 07		" " "	......	Ni
	62	21/9 "	72 00	73 40		" " "	......	Ni
	63[1]	— "	70 42	69 29	Near Cape Eglinton[1]..........	On floe ice..........	......	Ni
4. C. Baffin........	64	14/9 1928....	67 36	61 53	Off Merchants Bay..........	Net sample, surface..........	164	Go
	65	13/8 1924....	67 19	58 52	Davis Strait..........	Quantit. water samples..........	46	Gr
	66	9/8 "	66 58	59 10	" "	" "	43	Gr
	67	" "	66 30	58 45	" "	" "	42	Gr
	68	13/8 "	66 21	61 05	Off Exeter Sound..........	" "	45	Gr
	69	10/8 "	66 27	62 35	In Exeter Sound..........	" "	44	Gr
	70	4/7 1928....	66 55	58 30	Off Exeter Sound..........	Net sample, surface..........	41	Go
	71	3/7 "	66 52	58 08	" "	" " "	40	Go
	72	" "	66 51	57 40	" "	" " surf. and 3 vert..........	39	Go
	73	2/10 1894....	68 21	62 58	Off Merchants Bay..........	" " surface..........	......	Ni
	74	6/10 "	66 20	61 09	Off Exeter Sound..........	" " "	......	Ni
	75	7/10 "	64 30	61 20	Off Cumberland Gulf..........	" " "	......	Ni
	76	7/10 "	ab. 64	61 20				
	77	8/10 "	64 45	64 50	In Cumberland Gulf..........	" " "	......	Ni
	78	9/10 "	65 00	65 30		" " "	......	Ni
	79	10/10 "	64 50	65 40		" " "	......	Ni

5. S. Baffin.........	80	11/6 1928....	61 28	63 44	Off Resolution Is.............	Net samples, surf. and vert.........	18	Go
	81	" "	61 33	62 54	" "	" " surface..................	19	Go
	82	12/6 "	61 39	62 08	" "	" " "	20	Go
	83	" "	61 46	61 12	" "	" " "	21	Go
	84	13/6 "	61 55	59 45	" "	" " "	22	Go
9. (Hudson Strait)	85	Aug. 1931....	....	....	Akpatok Island...............	" " surf., horiz., and vert....	....	Po

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[1] *See* footnote (3) on p. 142. (N.P.)

from one depth to another (e.g., "vert. 150-50" means "vertical haul from 150 to 50 metres, the net being automatically closed at 50 metres"). The next column gives, for purposes of comparison, the collector's number or that used in the original paper. The last column gives the name of the collector or collecting expedition: thus "Na" means the Nares expedition, "Go" the *Godthaab* Expedition of 1928; "Ni" signifies the Swedish collector Nilsson, "Gr" Gran on board the *Michael Sars* in 1924; "Po" means Polunin; and "Su" stands for Sutherland of the expedition of 1850-1.[1]

LIST OF SPECIES

In the subjoined list of forms of Marine Phytoplankton found in the Canadian Eastern Arctic, the genera and within these the species in the three groups, viz., Diatomeae, Dinoflagellatae, and Flagellatae, are given in alphabetical order. In questions of nomenclature the same procedure has been followed as in the paper by Grøntved and Seidenfaden (1938). Here in dealing with the Diatomeae we followed Hustedt (1927-37), with the Dinoflagellatae and Flagellatae mainly Lebour (1925), Paulsen (1908), and Lemmermann (1908). These works further give the general distribution of the species, and such a statement is, therefore, omitted from the present paper. In order to save space, the name or other statement of the locality is omitted in the survey of the occurrence of the species, only the number being given according to the "list of localities" on pages 143-5.[2] As regards Nilsson's collections it should be added that Cleve's records are not specified, for which reason, e.g., our statement "47-63" does not mean that the species is represented in all these samples (as is usual with such a run of numbers, when no "quotes" are given), but only that it is recorded as occurring among them—in this case from the N. Baffin "group" of localities, cf. also footnote(³) on page 142. However, with Nilsson as with other collectors, an individual number not attached to another by a hyphen, and outside the "quotes", may be taken as a report for that individual number. Thus, "47 '49-51', 52 (Ni)" would imply three reports from Nilsson's material of the species under consideration—as follows: (1) from 47 (Pond Inlet, 2 September, 1894), (2) from at least one place within the range of localities indicated by the numbers 49-51 incl., and (3) from 52 (east of Coutts Inlet, 29 July, 1894).

By those who would advance the criticism that I have not myself seen the collections made by other expeditions, it may be remembered that in many cases they no longer exist. Responsibility for the correctness of the records lies, accordingly, with the original authors, and information about frequency, etc., is likewise derived from their papers. However, with the knowledge gained through prolonged study of the extensive collections made by the *Godthaab* Expedition, I have been able to add some critical remarks in a few cases. The names given by the earlier authors have likewise been altered to bring them into line with the system of nomenclature here adopted.

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[1] Cf. the historical remarks given above, and note that in this paper abbreviations in brackets have reference to collectors and indirectly to dates, whereas in the other papers they signify the herbaria in which specimens are to be seen. (N.P.)

[2] This will demand constant reference to other parts of the work and is against the general policy of the series. However, it was necessitated in the present instance by the fact that most of the localities are *at sea* and can at best be given only by lengthy statements or figures of latitude and longitude. (N.P.)

In the list the often-cited paper on the *Godthaab* Expedition has been abbreviated to "G. and S. 1938". As this paper had not been published at the time of writing, no pages could be cited; the reader can, however, refer to the index at the end of the paper now that it has been published.[1]

DIATOMEAE

1. **Achnanthes hyperborea** Grunow, Denkschr. Akad. Wiss. Wien, Math.-Nath. Kl., XLVIII, 2, p. 102, Pl. I, figs. 4-5 (1884).

Only found among ice-floes. Apart from the one Baffin locality the species has been recorded only from Franz Joseph Land.

E. Arctic Occurrence.

4. C. BAFFIN: 63 (Ni).

2. **Achnanthes taeniata** Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., XVII, 2, p. 22, Pl. I, fig. 5 (1880).

A truly arctic plankton species, no doubt widely distributed in the area in spring (cf. G. and S. 1938, fig. 9, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 26-27 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-34 (Go) rather common, 38-39 (Go) rather common.
3. N. BAFFIN: 42-44 (Go) rare; "41-57" (Ni) sparingly.
4. C. BAFFIN: 63 (Ni) sparingly; 68 (Gr) rather common.

3. **Actinocyclus alienus** Grunow, in Van Huerck, Syn. Diat. Belg., Pl. CXXV, figs. 10, 12 (1883).

var. **arcticus** Grunow, in Van Huerck, Syn. Diat. Belg., Pl. CXXV, fig. 12 (1883).

One of the "Wankarema" forms (Cleve 1896, pp. 17-8), only found among ice-floes.

E. Arctic Occurrence.

4. C. BAFFIN: 63 (Ni).

4. **Amphiprora hyperborea** (Grun.) Gran, Bibl. Bot., XLII, p. 22 (1897).

An arctic species, possibly more widely distributed in the spring.

E. Arctic Occurrence.

4. C. BAFFIN: 70-72 (Go) rare.
5. S. BAFFIN: 80 (Go) rare.

5. **Asteromphalus heptactis** (Bréb.) Ralfs, in Pritchard, Hist. Infus. ed. 4, p. 838, Pl. VIII, fig. 21 (1861).

As has already been stated (G. and S. 1938), Gran's report of this species (Gran 1929, p. 15) may just possibly result from confusion with the next; or perhaps specimens reach our area with more temperate water in the autumn?

E. Arctic Occurrence.

4. C. BAFFIN: 65-69 (Gr) rather common.

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[1] Emended in proof, September 1946.

6. **Asteromphalus robustus** Castracane, Atti. Acad. Pontif. N. Linc., XXVIII, p. 393, Pl. VI, fig. 5 (1875).

This species appears to be of widely scattered occurrence in the area. It is more common in Melville Bay (cf. G. and S. 1938, fig. 13).

E. Arctic Occurrence.

1. ELLESMERE: 25, 27, 29, 30 (Go) rare.
2. DEVON, ETC., ISLANDS: 33, 39 (Go) rare.
3. N. BAFFIN: 42, 43, 45, 46 (Go) rare; "58-62" (Ni) one single specimen.
4. C. BAFFIN: 70-72 (Go) rare; "77-79" (Ni) rather common.

7. **Bacteriosira fragilis** (Gran) Gran, Nyt Mag. f. Naturv., XXXVIII, 2, p. 14 (1900).

Rare in the whole area, or possibly more common earlier in the year (cf. G. and S. 1938, fig. 14, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 25, 26, 28-30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-35 (Go) rare.
4. C. BAFFIN: 68 (Gr) scarce.
9. HUDSON STRAIT[1]: 85 (Po) rare.

8. **Biddulphia aurita** (Lyngb.) de Brébisson & Godey, Consid. sur les Diat., p. 12 (1838).

Probably common as a littoral form along the coast, but rare in plankton.

E. Arctic Occurrence.

1. ELLESMERE: 4, 8, 11, 14, 19 (Na).
2. DEVON, ETC., ISLANDS: 36, 37 (Su) (in Dickie 1852, pp. cxcvii and cxcix, sub nom. *Odontella aurita*).
3. N. BAFFIN: 42 (Go) rare; "47-63" (Ni) "rarely in a few samples" (Cleve 1896, p. 6).
4. C. BAFFIN: 72 (Go) rare.
5. S. BAFFIN: 80 (Go) rare.

var. **obtusa** (Kütz.) Hustedt, Kieselalg. I, p. 848 (1930).

Not really a plankton form.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: 36, 37 (Su) (in Dickie 1852, pp. cxcvii and cxcix, sub nom. *Odontella obtusa*).

? *Biddulphia rhombus* (Ehrenb.) Sm. f. *trigona* Hustedt.

Dickie (in Sutherland 1852, pp. cxcvii and cxcix, sub nom. *Triceratium striolatum*) reports this form from two localities in our area, but possibly only as a result of confusion with the plant now called *Triceratium arcticum* f. *balaenum* (cf. G. and S. 1938).

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[1] This will be the designation throughout this account of the marine phytoplankton of my collections made off the coast of Akpatok Island in 1931. (N.P.)

9. **Chaetoceros atlanticus** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., I, 13, p. 11, Pl. II, fig. 8 (1873).

This true plankton species seems to be more or less common in the southern part of the area, especially in the autumn (cf. G. and S. 1938, fig. 15, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 25, 27-30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-33, 38-40 (Go) rare.
3. N. BAFFIN: 42-46 (Go) rare: "47-62" (Ni) sparingly.
4. C. BAFFIN: "73-79" (Ni) abundant; 64 (Go) rare; 65-69 (Gr) common; 70-72 (Go) common.
5. S. BAFFIN: 80-84 (Go) common in deeper layers only.
9. HUDSON STRAIT: 85 (Po) very common. Hudson Bay (Davidson 1931, p. 500—widespread).[1]

10. **Chaetoceros borealis** Bailey, Smithson. Contr. Knowl. VII, p. 8, figs. 22-3 (1854).

This diatom has nearly the same distribution as *C. atlanticus*, but tends to be less common (cf. G. and S. 1938, fig. 16, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 22 (Na); 24-30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31, 32, 38-40 (Go) sparingly.
3. N. BAFFIN: 42-46 (Go) sparingly; "47-62" (Ni) sparingly.
4. C. BAFFIN: 63 (Ni) sparingly; 66-69 (Gr) rather common; 70-72 (Go) sparingly.
5. S. BAFFIN: 80, 83, 84 (Go) sparingly.
9. HUDSON STRAIT: 85 (Po) rare.

11. **Chaetoceros compressus** Lauder, Trans. Micros. Soc., n.s. XII, p. 78, Pl. VIII, fig. 6 (1864).

Locally very common in the latter part of the summer, especially along the coast and at the borders of the cold, south-going water.

E. Arctic Occurrence.

1. ELLESMERE: 25-30 (Go) common.
2. DEVON, ETC., ISLANDS: 31, 38-40 (Go) sparingly.
3. N. BAFFIN: 42-46 (Go) common near the coast; "47-62" (Ni) (in Cleve 1896, p. 6, sub nom. *C. contortus*) sparingly.
4. C. BAFFIN: 64, 70-72 (Go) sparingly; "73-79" (Ni) sparingly.
9. HUDSON STRAIT: 85 (Po) rare. Hudson Bay (Davidson 1931, p. 500—usually "the dominant species").[1]

12. **Chaetoceros concavicornis** Mangin, Compt. rend. d. séances de l'Acad. d. Sc., CLXIV, pp. 704, 770, fig. 5 (1917).

In our area this diatom is only found sporadically, as a visitor from temperate waters. In the late autumn it may possibly occur nearer the coast in the southernmost part (cf. Iselin (1930, p. 27) and also the distribution map given by G. and S. (1938, fig. 18)).

E. Arctic Occurrence.

1. ELLESMERE: 25 (Go) rare.
2. DEVON, ETC., ISLANDS: 31, 40 (Go) rare.

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[1] *See* footnotes (1) and (2) on p. 142 (N.P., October 1946).

3. N. Baffin: 43 (Go) rare.
4. C. Baffin: 64, 71, 72 (Go) rare.
5. S. Baffin: 84 (Go) rare.

13. **Chaetoceros constrictus** Gran, Norske Nordh. Exp. Bot. Protophyt., p. 17, Pl. I, figs. 11-3; Pl. III, fig. 42 (1897).

Being even more characteristically confined to temperate waters than *C. concavicornis,* this species has been found only at the mouth of Hudson Strait in the autumn, which is in agreement with the statement by Iselin (1930, p. 27) that it is common in the autumn in Sandwich Bay, to the south of our area.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) rather common.

14. **Chaetoceros convolutus** Castracane, Diatom. Challeng. Exp., p. 78 (1886).

Almost as with *C. concavicornis,* this species is found only sporadically in our area as it belongs rather to temperate waters.

E. Arctic Occurrence.

1. Ellesmere: 28-30 (Go) rare.
2. Devon, etc., Islands: 31, 32 (Go) rare.
3. N. Baffin: 43 (Go) rare.
4. C. Baffin: 72 (Go) rare.
5. S. Baffin: 80, 84 (Go) rare.
9. Hudson Strait: 85 (Po) frequent in August. Hudson Bay (Davidson 1931, p. 501—widespread).

15. **Chaetoceros curvisetus** Cleve, Vid. Udbytte Kanonb. Haucks Togt i Danske Have, p. 55 (1889).

As to the statement by Cleve (1896, p. 6) concerning this species from the Eastern Arctic, *See* G. and S. 1938. Most likely it has the same distribution in our area as the other temperate species, arriving in the southeastern parts in the autumn.

E. Arctic Occurrence.

4. C. Baffin: "73-79" (Ni).

16. **Chaetoceros debilis** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., XX, Afd. 3, No. 2, p. 13, Pl. I, fig. 2 (1894).

This boreal species is locally very common in August, especially near the coasts in the southeastern parts of our area (cf. G. and S. 1938, fig. 20, map of distribution).

E. Arctic Occurrence.

1. Ellesmere: 26 (Go) rare.
2. Devon: 31 (Go) rare.
3. N. Baffin: 42-46 (Go) rare except close to land.
4. C. Baffin: 64 (Go) rare; 68, 69 (Gr) rather common; 71, 72 (Go) sparingly.
9. Hudson Strait: 85 (Po) commonest of all diatoms.

17. **Chaetoceros decipiens** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., I, 13, p. 11, Pl. I, fig. 5 (1873).

This species is dominant in the West Greenland current in the first part of the summer. Along the coasts of the Canadian Eastern Arctic the same maximum seems to occur in August-October (cf. the distribution map given by G. and S. 1938, fig. 21).

E. Arctic Occurrence.

1. Ellesmere: 22 (Na); 24-30 (Go) locally very common.
2. Devon, etc., Islands: 31, 32, 34, 38-40 (Go) common.
3. N. Baffin: 42-46 (Go) common, especially near the coast; "47-62" (Ni) sparingly in most samples.
4. C. Baffin: 64 (Go), 68, 69 (Gr) rather common; 70-72 (Go) rare; "73-79" (Ni) abundant in October.
5. S. Baffin: 80-84 (Go) common in the east, but nearer the coast only at greater depths.
9. Hudson Strait: 85 (Po) common. Hudson Bay (Davidson 1931, p. 501—"well distributed over the bay").

18. **Chaetoceros densus** Cleve, Seasonal distr. Atlant. Pl. Organ., p. 299 (1901).

Widespread in our area, although apparently rare. Perhaps more common later in the summer.

E. Arctic Occurrence.

1. Ellesmere: 25-30 (Go) rare.
2. Devon, etc., Islands: 31, 38-40 (Go) rare.
3. N. Baffin: 42-44, 46 (Go) rare.
4. C. Baffin: 70-72 (Go) rare.
5. S. Baffin: 84 (Go) rare.

19. **Chaetoceros diadema** (Ehrenb.) Gran, Norske Nordh. Exp. Bot. Protophyt., p. 20, Pl. II, figs. 16-8 (1897).
C. subsecundus (Grun.) Hustedt

As to the seasonal variation of this species, *See* G. and S. 1938.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) locally very common.
2. Devon, etc., Islands: 31-34, 38-40 (Go) locally common.
3. N. Baffin: 42-46 (Go) common near the coast; "54-57" (Ni) in large masses in August.
4. C. Baffin: 64, 70-72 (Go) rare.
5. S. Baffin: 80, 84 (Go) rare.
9. Hudson Strait: 85 (Po) very rare. ? Hudson Bay (Davidson 1931, p. 502—"few specimens", uncertain).

20. **Chaetoceros fragilis** Meunier, in Duc d'Orleans, Camp. Arct., p. 244, Pl. XXVII, figs. 27-9 (1910).

It is very interesting to note that this arctic species, which outside our area has only been found in the regions around the Kara and Barents Seas, has recently been found in Hudson Strait (Polunin 1935, p. 190). This would seem to indicate that the water flowing out through Hudson Strait has some connection with the Polar Basin, possibly through Fury and Hecla Strait.[1]

E. Arctic Occurrence.

1. ELLESMERE: 28, 29 (Go) rare.
3. N. BAFFIN: 42 (Go) rare.
9. HUDSON STRAIT: 85 (Po) rare.

21. **Chaetoceros furcellatus**[2] Bailey, Am. Jour. Sc. ser. 2, XXII, p. 3, Pl. I, fig. 4 (1856).

This species seems to have its maximum in the middle of the summer. It is rarely found in the southern parts of our area (cf. G. and S. 1938, fig. 24, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 24-30 (Go) only common in 29.
2. DEVON, ETC., ISLANDS: 31-34, 40 (Go) only common in 31.
3. N. BAFFIN: 42-46 (Go) most common towards the east; "54-57" (Ni) sparingly.
4. C. BAFFIN: 64 (Go); 68-69 (Gr); 71-72 (Go) only common in deeper layers; 73 (Ni) sparingly.
5. S. BAFFIN: 80 (Go) rare.

22. **Chaetoceros gracilis** Schütt, Ber. Deutsch. Bot. Gesellsch., XIII, p. 42, fig. 13 (1895).

This taxonomically very difficult species may possibly be more widely distributed in our area than is indicated by the few records given below.

E. Arctic Occurrence.

3. N. BAFFIN: 41, "54-57" (Ni) sparingly in the plankton from the middle of August.
9. HUDSON STRAIT: 85 (Po) rather common.

23. **Chaetoceros karianus** Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., XVII, 2, p. 120, Pl. VII, fig. 135 (1880).

This truly arctic species, whose determination has again proved difficult (cf. G. and S. 1938), outside our area has only been found in the Kara and Barents Seas.[1]

E. Arctic Occurrence.

1. ELLESMERE: 26 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-33 (Go) rare.

24. **Chaetoceros laciniosus** Schütt, Ber. Deutsch. Bot. Gesellsch., XIII, p. 38, fig. 5 (1895).

Of sporadic occurrence. As to the seasonal variation, *See* G. and S. 1938.

E. Arctic Occurrence.

1. ELLESMERE: 28-30 (Go) rather rare.
2. DEVON, ETC. ISLANDS: 31-32 (Go) rare; 40 (Go) common.

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[1] With regard to Mr. Seidenfaden's suggestion, having myself worked at sea and on land in both the Hudson Strait and Barents Sea regions, I cannot help remarking that in spite of its higher latitude the latter is much less "arctic" in type than the former, which indeed corresponds climatically rather with the Kara Sea, whereas Barents Sea, at least in the south, seems much affected by the warm waters of the Gulf Stream. (N.P.)

[2] Originally spelled "*furcillatum*." (N.P.)

3. N. BAFFIN: 42, 43, 46 (Go) rare.
4. C. BAFFIN: 64, 70-72 (Go) sparingly.
5. S. BAFFIN: 80, 83, 84 (Go) rare.
9. HUDSON BAY: (Davidson 1931, pp. 502-3—widespread and sometimes abundant).

25. **Chaetoceros mitra** (Bail.) Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., XXII, 3, No. 4, p. 8, Pl. II, figs. 1-2 (1896).

Of this species Cleve (*l.c.*) states: "In Baffins Bay it appears in the middle of August and continues to the end of September." It seems to have been overlooked or confounded with other species by the later expeditions.

E. Arctic Occurrence.

3. N. BAFFIN: 41, 47, "58-62" (Ni).

26. **Chaetoceros pseudocrinitus** Ostenfeld, Nyt Mag. f. Naturv., XXXIX, 4, p. 300, fig. 11 (1901).

A temperate species, appearing chiefly as an autumn visitor.[1]

E. Arctic Occurrence.

4. C. BAFFIN: 69 (Gr) singly.
9. HUDSON STRAIT: 85 (Po) occasionally.

27. **Chaetoceros radicans** Schütt, Ber. Deutsch. Bot. Gesellsch., XIII, p. 48, fig. 27 (1895).

As the preceding species.[1]

E. Arctic Occurrence.

4. C. BAFFIN: 69 (Gr) a single chain observed (cf. Gran 1929, p. 16, sub nom. *C. scolopendra*).

28. **Chaetoceros septentrionalis** Østrup, Medd. om Grønland, XVIII, p. 457, Pl. VII, fig. 88 (1895).

An arctic diatom, rarely found, but possibly overlooked or confounded with other species. The occurrence in Hudson Strait may be explained in the same way as was suggested in the case of *C. fragilis* (*See* pages 151-2).

E. Arctic Occurrence.

1. ELLESMERE: 28, 30 (Go) very rare.
2. DEVON, ETC., ISLANDS: 32, 33, 38-40 (Go) very rare.
3. N. BAFFIN: 44 (Go) very rare.
4. C. BAFFIN: 72 (Go) very rare.
9. HUDSON STRAIT: 85 (Po) very rare.

29. **Chaetoceros socialis** Lauder, Trans. Micros. Soc., n.s. XII, p. 77, Pl. VIII, fig. 1 (1864).

This species is common close to the coasts in the middle of the summer (cf. the distribution map given by G. and S. 1938, fig. 30).

E. Arctic Occurrence.

1. ELLESMERE: 25-30 (Go) locally very common.
2. DEVON: 31-34, 38-40 (Go) mostly common.

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[1] Mr. Seidenfaden added, "with temperate water," but in view of other statements made elsewhere, and of the geographical positions of the points of collection, I have taken the liberty, in his absence, to omit what is at best a mere supposition. (N.P.)

3. N. Baffin: 42-46 (Go) common, especially in deeper layers; "58-62" (Ni) abundant.
4. C. Baffin: 64 (Go) sparingly; 68 (Gr) sparsely; 70-72 (Go) not common.
9. Hudson Strait: 85 (Po) very common.

30. **Chaetoceros teres** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., XXII, 3, No. 5, p. 30, fig. 7 (1896).

A temperate form, rare towards the north, but possibly becoming more frequent in the southeast in autumn.

E. Arctic Occurrence.

1. Ellesmere: 29 (Go) rare.
2. Devon, etc., Islands: 31 (Go) rare.
3. N. Baffin: 42-44 (Go) rare.
4. C. Baffin: 64, 72 (Go) rare.
5. S. Baffin: 84 (Go) rare.
9. Hudson Strait: 85 (Po) rather frequent.

31. **Chaetoceros wighamii** Brightwell, Quart. Jour. Micros. Sci., IV, p. 108, Pl. VII, figs. 19-36 (1856).

A truly arctic species, which is only occasionally carried south of Davis Strait.

E. Arctic Occurrence.

1. Ellesmere: 25-30 (Go) locally very common.
2. Devon, etc., Islands: 31-34, 38-40 (Go) locally very common.
3. N. Baffin: 42-46 (Go) rare.
4. C. Baffin: 68-69 (Gr); 71-72 (Go) rare.

Cocconeis spp.

None of the species of this genus occurs regularly as plankton. Reports in the earlier literature result from the samples having been taken either from the bottom of the sea or else from the littoral zone.

Coscinodiscus

For a discussion of the earlier reports of forms of this intricate genus *See* G. and S. 1938. Here I will only list such records as I consider reasonably sure.

32. **Coscinodiscus centralis** Ehrenb. emend. Hustedt, Kielselalg. I, p. 434, Leipzig 1930.

For older records *See* G. and S. 1938. This species is very characteristic of the Labrador current in the early summer.

E. Arctic Occurrence.

1. Ellesmere: 24-29 (Go) rare.
2. Devon, etc., Islands: 31-35, 39, 40 (Go) rare.
3. N. Baffin: 43, 45, 46 (Go) rare.
4. C. Baffin: 64 (Go) rare; 70-72 (Go) rather common.
5. S. Baffin: 80-84 (Go) very common.

33. **Coscinodiscus curvatulus** Grunow, in A. Schmidt, Atlas d. Diat., Pl. LVII, fig. 33 (1878).

var. **karianus** Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 113, Pl. VII, fig. 129 (1880).

A truly arctic diatom, not found south of the 66th parallel, and never occurring in any great numbers. Besides the definite statements given below, it seems probable that Gran's *C. curvatulus* from C. Baffin: 65-69 should also be referred to this variety (cf. Gran 1929, p. 17).

E. Arctic Occurrence.

1. Ellesmere: 28 (Go) rare.
3. N. Baffin: 42, 43 (Go) rare.
4. C. Baffin: 63 (Ni); 64, 70, 72 (Go) rare.
5. S. Baffin: (Go).

var. **minor** (Ehrenb.) Grunow, Denkschr. Akad. Wiss. Wien, Math.-Nath. Kl., XLVIII, p. 83, Pl. D, figs. 8, 10 (1884).

It seems just possible that the report of this by Dickie (in Sutherland 1852, p. cxcvii, sub nom. *C. minor*) may be due to confusion with var. *karianus* or with some other species.

E. Arctic Occurrence.

(? Devon, etc., Islands: 37 (Su)?[1].)

34. **Coscinodiscus excentricus** Ehrenberg, Abh. Berl. Akad. 1839, p. 146 (1841) [1840].

The many older statements, e.g., in the material of the Nares expedition, seem to me rather dubious, because this species is as a rule considered a truly oceanic plankton one. On the other hand, the report by Polunin is probably correct; indeed several other oceanic forms are met with near Akpatok Island in the autumn.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) sparingly.

35. **Coscinodiscus lacustris** Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 114 (1880).

var. **hyperboreus** Grunow, Denkschr. Akad. Wiss. Wien, Math.-Nath. Kl., XLVIII, p. 85, Pl. D, fig. 26 (1884).

Not really a plankton diatom—probably transported from the coast with the ice (cf. Cleve 1896, p. 10).

E. Arctic Occurrence.

3. N. Baffin: 41 (Ni).

36. **Coscinodiscus radiatus** Ehrenberg, Abh. Berl. Akad. 1839, p. 148, Pl. III, figs. 1 a-c (1841) [1840].

The remarks given under *C. excentricus* are also applicable here.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) rather common.

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[1] "On bottom Algae"; one of the entities listed by Mr. Seidenfaden (p. 176) as "not real plankton species but rather ice or littoral forms". (N.P.)

37. **Coscinodiscus stellaris** Roper, Quart. Jour. Micros. Sci., VI, p. 21, Pl. III, fig. 3 (1858).

This oceanic species has only been recorded by Gran (1929, p. 17).

E. Arctic Occurrence.

4. C. Baffin: 69 (Gr) sparsely.

38. **Coscinosira polychorda** Gran, Nyt Mag. f. Naturv., XXXVIII, 2, p. 115 (1900).

Only found sporadically, but probably more common earlier in the year.

E. Arctic Occurrence.

1. Ellesmere: 25, 27-30 (Go) sparingly.
2. Devon, etc., Islands: 31, 38 (Go) rare.
4. C. Baffin: 72 (Go) rare.
9. Hudson Strait: 85 (Po) frequent. Hudson Bay (Davidson 1931, p. 505—"very rare").

39. **Cyclotella striata** (Kütz.) Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., XVII, 2, p. 119 (1880).

Not a real plankton species—probably transported by the ice.

E. Arctic Occurrence.

2. Devon, etc., Islands: 37 (Su) (in Dickie 1852, p. cxcvii, sub nom. *Coscinodiscus striatus*).

40. **Dactyliosolen antarcticus** Castracane, Diatom. Challeng. Exp., p. 75, Pl. IX, fig. 7 (1886).

A *relatively* temperate species, *presumably* carried as an autumn visitor with temperate water to the southeastern parts of our area?[1]

E. Arctic Occurrence.

5. S. Baffin: 80 (Go) very rare.
9. Hudson Strait: 85 (Po) rare.

41. **Detonula confervacea** (Cleve) Gran, Nyt Mag. f. Naturv., XXXVIII, 2, p. 113 (1900).

As this species is abundant near Cape York in northwestern Greenland, it may possibly be found also in the northern parts of our area (cf. G. and S. 1938).

E. Arctic Occurrence.

3. N. Baffin: Sparingly in some of Nilsson's samples (cf. Cleve 1896, p. 11, sub nom. *Lauderia confervacea*).
4. C. Baffin: 69 (Gr).

42. **Eucampia zodiacus** Ehrenberg, Abh. Berl. Akad. 1839, p. 151, Pl. IV, fig. 8 (1841) [1840].

Following Hustedt (Kieselalg. I, p. 772, 1930), *E. zodiacus* and *E. groenlandica* Cleve are here considered as one species. Cleve (1896,

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[1] The mark of interrogation and words in italics are mine—cf. footnote on p. 153 although the need for scepticism seems less extreme in the present instance. (N.P.)

p. 10) and Gran (1929, pp. 12 *et seq.*) use the last-mentioned name, whereas Polunin (1934, p. 201, and 1935, p. 190) keeps them apart as separate species.

E. Arctic Occurrence.

1. Ellesmere: 25, 26, 28-30 (Go) very rare.
2. Devon, etc., Islands: 31-33, 40 (Go) very rare.
3. N. Baffin: 45 (Go) rare; 41, "54-57" (Ni) sparingly.
4. C. Baffin: 68, 69 (Gr) sparsely; "73-79" (Ni) sparsely.
9. Hudson Strait: 85 (Po) rare.

43. **Fragilaria cylindrus** Grunow, Denkschr. Akad. Wiss. Wien, Math.-Nath. Kl., XLVIII, p. 107, Pl. 2, fig. 13 (1884).

For records of this species within our area we have only Cleve's remark (1896, p. 11) that it "became scarce later on in the year", which evidently means that it was found in some of Nilsson's samples from the Baffin coast.

E. Arctic Occurrence.

(?N. and C. Baffin: (Ni)[1] (in Cleve 1896, p. 11).)

44. **Fragilaria islandica** Grunow, in Van Huerck, Syn. Diat. Belg., Pl. XLV, fig. 37 (1881).

This species is probably more common towards the north in the spring than is indicated by the meagre records given below.

E. Arctic Occurrence.

1. Ellesmere: 26 (Go) rare.
4. C. Baffin: 71, 72 (Go) rare.
9. Hudson Strait: 85 (Po) very frequent.

45. **Fragilaria nana** E. S. Nielsen, Medd. Komm. Danmark Fisk. Havunders. Ser. Plankt., III, 1, p. 74, København 1935.

A temperate species, occurring as a visitor in the southeastern parts of the area.

E. Arctic Occurrence.

4. C. Baffin: 70, 72 (Go) rare.
5. S. Baffin: 84 (Go) rare.

46. **Fragilaria oceanica** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., I, 13, p. 22, Pl. IV, fig. 25 (1873).

This species seems to be most plentiful towards the north and near the shore, but will probably be found to be very common all along the coasts in the spring.

E. Arctic Occurrence.

1. Ellesmere: 2, 12, 19 (Na); 24, 26-30 (Go) rather rare.
2. Devon, etc., Islands: 31-35, 38-40 (Go) very common in Jones Sound.
3. N. Baffin: 42-46 (Go) common in deeper layers near the coasts; 41, "47-62" (Ni) scarce.
4. C. Baffin: 68 (Gr); 70, 72 (Go) rare; "73-79" (Ni) sparingly.
5. S. Baffin: 80, 82 (Go) rare.
9. Hudson Strait: 85 (Po) rare.

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[1] Listed by Mr. Seidfenfaden (p. 176) as one of the entities "which are not real plankton species but rather ice or littoral forms." (N.P.)

47. **Fragilaria striatula** Lyngbye, Tentam. Hydroph. Danic., p. 183, Pl. LXIII (1819).

A littoral species, which may, however, be found in the ice during the spring.

E. Arctic Occurrence.

1. Ellesmere: 3, 12, 16, 19, 22 (Na) (in Dickie 1880, p. 11, sub nom. *Grammonema striatula*).

Gomphonema, Grammatophora, Hyalodiscus

Species belonging to these genera were found and recorded by the earlier expeditions. They are all littoral forms that are not observed in true plankton samples.

48. **Isthmia nervosa** Kützing, Bacill., p. 137, Pl. 19, fig. 5 (1844).

This littoral species was observed in the plankton off Akpatok Island (cf. Polunin 1935, p. 190).

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) very rare.

49. **Leptocylindrus danicus** Cleve, Pelag. Diatom. fr. Kattegat, p. 54 (1889).

A temperate-boreal species, of scattered occurrence in the colder waters; it could probably be found also in the western parts of Davis Strait in the autumn.

E. Arctic Occurrence.

1. Ellesmere: 25-30 (Go) rare.
2. Devon, etc., Islands: 31, 33 (Go) rare.
4. N. Baffin: 42, 43 (Go) rare.
9. Hudson Strait: 85 (Po) occasional.

50. **Leptocylindrus minimus** Gran, Bull. Plankt. 1912 publ. Bur. Cons. perm. intern. expl. mer., p. 72, fig. 5 (1915).

This tiny species may possibly be discovered also in the northern parts of our area, together with *L. danicus*.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) rare.

51. **Melosira arctica** Dickie, in Sutherland, Jour. Voy. Baffin's Bay and Barrow Str. II, p. cxcvi (1852).

This species is mostly attached to the ice-floes, on which it may sometimes be found in great masses—especially in early spring.

E. Arctic Occurrence.

1. Ellesmere: 10-13, 15 (Na) (in Dickie 1880, p. 11, sub nom. *M. nummuloides*); 24, 26-30 (Go) rare.
2. Devon, etc., Islands: 31-35, 38-40 (Go) sparingly.
3. N. Baffin: 42-44 (Go) rare; 41, "54-57" (Ni) (in Cleve 1896, p. 11, sub nom. *M. hyperborea*) sparingly.
4. C. Baffin: 70, 72 (Go) sparingly.
5. S. Baffin: 80 (Go) rare.

52. **Melosira moniliformis** (Müll.) Agardh, Syst. Alg., p. 8 (1824).

This species is mentioned in the list from Akpatok Island (Polunin 1935, p. 190, sub nom. *M. borreri*), where it is not uncommon. Probably it is plentiful as a littoral form along the coasts. It was also found in material collected by the Nares expedition in northwestern Greenland (*See* Cleve 1884, p. 316), but has not yet been recorded from the Ellesmere coast.

E. Arctic Occurrence.

9. HUDSON STRAIT: 85 (Po).

53. **Melosira sulcata** (Ehrenb.) Kützing, Die kies. Bacill., p. 55, Pl. II, fig. 7 (1844).

A littoral species, sometimes found in plankton (cf. Lebour 1930, p. 28). It has only been mentioned once from our area—by Ehrenberg (1853, p. 524, sub nom. *Gallionella sulcata*).

E. Arctic Occurrence.

2. DEVON: 37 (Su).

Navicula

Only such species as are found more or less commonly in plankton samples are included here.

54. **Navicula granii** (Jørg.) Gran, Nordisches Plankt., p. 124 (1905).

From Jones Sound specimens up to 80μ were measured (cf. the remarks and fig. 40 in G. and S. 1938).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: 31-35, 39 (Go) rare.
4. C. BAFFIN: 72 (Go) rare.

55. **Navicula pelagica** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., XXII, 3, 4, p. 11, Pl. I, fig. 9 (1896).

In Nilsson's samples taken in August, this truly arctic species is recorded by Cleve (*l.c.*) as very scarce. It has not been found by later expeditions to the area, but may possibly occur more generally in spring. It is also recorded from the Murman and Barents Seas.

E. Arctic Occurrence.

3. N. BAFFIN: 41, "54-57" (Ni).

56. **Navicula septentrionalis** (Grun.) Gran, Nordisches Plankt., p. 124, fig. 167 (1905).

A very rare arctic species, probably attached to the ice-floes.

E. Arctic Occurrence.

4. C. BAFFIN: 72 (Go) rare.

57. **Navicula vanhoffenii** Gran, Bibl. Bot., XLII, p. 21, Pl. I, figs. 1-3 (1897).

As the preceding species.

E. Arctic Occurrence.

3. N. Baffin: 41, "54-57" (Ni) (in Cleve 1896, p. 11, sub nom. *N. septentrionalis,* cf. Gran *l.c.*).
4. C. Baffin: 72 (Go) rare.[1]

58. **Nitzschia closterium** (Ehrenb.) W. Smith, Syn. Brit. Diat. I, p. 42, Pl. XV, fig. 120 (1853).

An arctic species, attached to the ice-floes.

E. Arctic Occurrence.

1. Ellesmere: 1, 3, 19, 21 (Na); 26, 29 (Go) rare.
2. Devon, etc., Islands: 31-33, 38, 39 (Go) rare.
3. N. Baffin: 43, 44 (Go) rare; sparingly in most of Nilsson's samples.
4. C. Baffin: 67, 68 (Gr) sparingly; "73-79" (Ni) sparingly.
9. Hudson Bay (Davidson 1931, p. 503—evidently rare).

59. **Nitzschia delicatissima** Cleve, Treat. Phytopl. North. Atlant., p. 24, Pl. II, fig. 22 (1897).

A temperate species, presumably coming to our area only with north-moving water in the autumn.

E. Arctic Occurrence.

4. C. Baffin: 69 (Gr) rare.
9. Hudson Bay (Davidson 1931, p. 503—found at only one station in the northwest).

60. **Nitzschia frigida** Grunow, in Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., XVII, 2, p. 94, Pl. V, fig. 101 (1880).

An arctic spring form, occurring mainly in the ice.

E. Arctic Occurrence.

1. Ellesmere: 25, 28 (Go) rare.
2. Devon, etc., Islands: 40 (Go) rare.
3. N. Baffin: 41, "47-57" (Ni) sparingly.

61. **Nitzschia seriata** Cleve, Vega Exp. Vetensk. Iaktt. III, Pl. XXXVIII, fig. 75 (1883).

This species is probably more common early in the year than is suggested by the records given below.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) rare.
2. Devon, etc., Islands: 31-35, 38, 40 (Go) sparsely.
3. N. Baffin: 42-44 (Go) rare; probably also in some of Nilsson's samples (cf. Cleve 1896, p. 12).
4. C. Baffin: 64, 72 (Go) rare; "73-79" (Ni) rare.
5. S. Baffin: 80 (Go) rare.
9. Hudson Strait: 85 (Po) rare. Hudson Bay (Davidson 1931, p. 503—widespread but "in very small numbers").

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[1] Probably also Ellesmere: 4 (Na)—cf. G. and S. 1938.

Several other species of *Nitzschia* are mentioned in the literature as having been collected by the older expeditions to our area, but as they have not been found in the recent plankton samples the evidence is not considered sufficient to warrant their inclusion here.

62. **Pleurosigma** sp.

Of the several species belonging to this genus that have been reported from our area, only one, which was not determined from the collections of the *Godthaab* Expedition, seems to occur as plankton (cf. G. and S. 1938). The *Pleurosigma* occurring in most of Nilsson's samples from N. and C. Baffin was determined as *P. stuxbergii* Cleve & Grunow (cf. Cleve 1896, p. 12).

63. **Podosira glacialis** (Grun.) Jørgensen, in Nordgaard, Hydr. and Biol. Invest. in Norw. Fjords, p. 97 (1905).

Probably more common in the spring than is suggested by the statements given below.

E. Arctic Occurrence.

1. ELLESMERE: 25, 26, 29, 30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-35, 38-40 (Go) rare.
3. N. BAFFIN: 42-44 (Go) sparsely.
4. C. BAFFIN: 68 (Gr 1929, p. 13, sub nom. *Lauderia glacialis*); 72 (Go) rare.
9. HUDSON STRAIT: 85 (Po 1935, p. 190, sub nom. *Lauderia*) rather frequent.

64. **Rhabdonema adriaticum** Kützing, Die kies. Bacill., p. 126, Pl. XVIII, fig. 7 (1844).

This relatively southern and temperate, littoral species is recorded as rather frequent in Polunin's samples from Akpatok Island.

E. Arctic Occurrence.

9. HUDSON STRAIT: 85 (Po).

65. **Rhabdonema arcuatum** (Lyngb.) Kützing, Die kies. Bacill., p. 126, Pl. XVIII, fig. 6 (1844).

A littoral species, recorded by Dickie (1880, p. 11) as occurring in the material brought back by the Nares expedition.

E. Arctic Occurrence.

1. ELLESMERE: 8 (Na).

66. **Rhabdonema minutum** Kützing, Die kies. Bacill., p. 126, Pl. XXI, figs. 2, 4 (1844).

A littoral species, recorded by Dickie (1852, p. cxcvii).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: 36, 37 (Su).

67. **Rhizosolenia alata** Brightwell, Quart. Jour. Micros. Sci., VI, p. 96, Pl. V, fig. 8 (1858).

f. **inermis** (Castracane) Hustedt, Kieselalg. I, p. 602, fig. 348, Leipzig 1930.

A temperate oceanic species, in my opinion generally coming to our area with northward-moving water.

E. Arctic Occurrence.

4. C. Baffin: 70, 72 (Go) rare.
5. S. Baffin: 80, 82, 83 (Go) rare.
9. Hudson Strait: 85 (Po) rare. Hudson Bay (Davidson 1931, p. 503—the *forma* uncertain).

68. **Rhizosolenia hebetata** Bailey emend. Gran, Fauna arctica III, 3, p. 524, Pl. XVII, figs. 9, 10 (1904).

f. **hiemalis** Gran, Fauna arctica III, 3, p. 527 (1904).

A true "autumn type" in the northern part of our area, although as a rule it is very rare.

E. Arctic Occurrence.

1. Ellesmere: 27-30 (Go) rare.
2. Devon, etc., Islands: 31, 32 (Go) rare.
3. N. Baffin: 42, 43, 45 (Go) rare; 62 (Ni) very rare.
4. C. Baffin: 64: (Go) rare.

f. **semispina** (Hensen) Gran, Fauna arctica III, 3, p. 527, Pl. XVII, figs. 11, 12 (1904).

This form is the dominant diatom in Baffin Bay in the late summer.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) very common.
2. Devon, etc., Islands: 31-35, 38-40 (Go) very common except on the southern side of Jones Sound (east-moving water!).
3. N. Baffin: 42-46 (Go) very common.
4. C. Baffin: 64 (Go) very common; 65-69 (Gr) very common; 70-72 (Go) common towards the east.
5. S. Baffin: 80-84 (Go) rare.

Rhizosolenia setigera Brightwell

This species is reported by Cleve (1896, p. 12) to occur in most of Nilsson's samples from Baffin Bay. As it has not been observed in the *Godthaab* or any other recent collection from the area, it seems most likely that the plant Cleve had was instead *Rhizosolenia hebetata* f. *semispina*, which is not mentioned in his paper. *R. setigera* is a temperate species that has been observed a few times in the autumn near the west coast of Greenland and has also been reported by Iselin (1930, p. 28) from Labrador.[1]

69. **Rhizosolenia styliformis** Brightwell, Quart. Jour. Micros. Sci., VI, p. 94, Pl. V, figs. 5 a-d (1858).

A temperate species, perhaps generally occurring as a visitor with northward-moving water, and becoming rather frequent towards the southeast in autumn.

E. Arctic Occurrence.

2. Devon, etc., Islands: 40 (Go) rare.

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[1] The reports of this species from Hudson Bay by Davidson (1931, p. 504) are likewise all from south of our southern boundary, although in one case in the west this is very closely approached. (N.P., October 1946.)

3. N. Baffin: 42, 43, 45 (Go) rare.
4. C. Baffin: 64, 72 (Go) rare.
5. S. Baffin: 84 (Go) rare.
9. Hudson Strait: 85 (Po) very frequent.

70. **Streptotheca tamensis** Shrubsole, Jour. Quekett Micros. Cl. ser. 2, IV, p. 260, Pl. XIII, figs. 4-6 (1891).

This usually temperate species was observed in Polunin's material from Akpatok Island.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po).

71. **Thalassiosira bioculata** (Grun.) Ostenfeld, Botany of the Faeröes II, p. 564, figs. 120-1 (1903).

Probably common along the whole of the eastern coast in spring.

E. Arctic Occurrence.

1. Ellesmere: 24-26, 28-30 (Go) sparingly.
2. Devon, etc., Islands: 31-34, 38-40 (Go) sparingly, except in 34 where it is common.
3. N. Baffin: 42-46 (Go) sparingly.
4. C. Baffin: 63 (Ni); 64 (Go) rare; "73-79" (Ni) (in Cleve 1896, p. 10, sub nom. *Coscinodiscus bioculata*) not rare.
5. S. Baffin: 82, 84 (Go) rare.

var. **exigua** Grunow, Denkschr. Akad. Wiss. Wien, Math.-Nath. Kl., XLVIII, p. 108, Pl. D, fig. 2 (1884).

Recorded from Cape Eglinton (C. Baffin: 63 (Ni)) together with the typical form.[1]

72. **Thalassiosira decipiens** (Grun.) Jørgensen, in Nordgaard, Hydr. and Biol. Invest. in Norw. Fjords, p. 96 (1905).

Most likely an autumn visitor in the southeastern parts of our area.

E. Arctic Occurrence.

4. C. Baffin: 68, 69 (Gr).

73. **Thalassiosira gravida** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., XXII, 3, 4, p. 12, Pl. II, figs. 14-16 (1896).

Common in the whole area, especially in the early part of the summer.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) locally very common.
2. Devon, etc., Islands: 31-35 (Go) common; 38-40 (Go) rare.
3. N. Baffin: 42-45 (Go) rare; 41, "47-62" (Ni) with endocysts.
4. C. Baffin: 63 (Ni); 65-69 (Gr) common in deeper layers; 70-72 (Go) sparsely.
5. S. Baffin: 80-84 (Go) rare.
9. Hudson Strait: 85 (Po) frequent.

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[1] This is among the entities listed by Mr. Seidenfaden on p. 176 as "not real plankton species but rather ice or littoral forms". (N.P.)

74. **Thalassiosira hyalina** (Grun.) Gran, Bibl. Bot., XLII, p. 4, Pl. I, figs. 17-8 (1897).

A West Greenland spring form.

E. Arctic Occurrence.

2. Devon, etc., Islands: 38 (Go) rare.
4. C. Baffin: 70, 72 (Go) rare.
9. Hudson Bay (Davidson 1931, p. 504—fairly widespread but apparently not numerous).

75. **Thalassiosira nordenskioldii** Cleve, Bih. Kgl. Sv. Vet.-Akad. Handl., I, 13, p. 7, Pl. I, fig. 1 (1873).

This is one of the commonest species along the coasts in the middle of the summer.

E. Arctic Occurrence.

1. Ellesmere: 2, 11-14, 16, 17, 21, 23 (Na); 24-30 (Go) locally very common.
2. Devon, etc., Islands: 31-35, 38-40 (Go) very common.
3. N. Baffin: 42-46 (Go) very common; 41, "47-63" (Ni) common.
4. C. Baffin: 64 (Go) rare; 68 (Gr); 70-72 (Go) sparingly.
9. Hudson Strait: 85 (Po) very abundant.

76. **Thalassiosira rotula** Meunier, in Duc d'Orleans, Camp. Arct., p. 264, Pl. XXIX, figs. 67-70 (1910).

Recorded by Polunin in the material from Akpatok Island (cf. G. and S. 1938).

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po).

77. **Thalassiosira subtilis** (Ostenf.) Gran, Nyt Mag. f. Naturv., XXXVIII, 2, p. 117 (1900).

This species, observed in the material from Akpatok Island (cf. Polunin 1935, p. 190), may *perhaps* be considered a *mere*[1] temperate visitor in the autumn. It has also been found by Iselin (1930, p. 28) not far to the south of our area.

E. Arctic Occurrence.

9. Hudson Strait: 85 (Po) plentiful.

78. **Thalassiothrix longissima** Cleve & Grunow, Kgl. Sv. Vet.-Akad. Handl., XVII, 2, p. 108 (1880).

Not common in our area, but possibly it could be found more often in the southern parts in the late autumn.

E. Arctic Occurrence.

1. Ellesmere: 26, 27, 29 (Go) rare.
2. Devon, etc., Islands: 32, 34, 39 (Go) rare.
3. N. Baffin: 43, 45, 46 (Go) rare.
4. C. Baffin: 63 (Ni); 64, 70, 72 (Go) rare; 66, 69 (Gr) sparingly; "73-79" (Ni).
5. S. Baffin: 80, 82 (Go) rare.

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[1] The words in *italics* are my addition. (N.P.)

79. **Triceratium arcticum** Brightwell, Quart. Jour. Micros. Sci., I, p. 250, Pl. IV, fig. 11 (1853).

A littoral species, probably common along the whole eastern coast of our area.

E. Arctic Occurrence.

1. Ellesmere: 2, 11, 12, 14, 17 (Na).
9. Hudson Strait: 85 (Po) single specimens (cf. Polunin 1935, p. 190, sub nom. *Biddulphia arctica*).

f. **balaenum** (Ehrenb.) Meunier, in Duc d'Orleans, Camp. Arct., p. 285, Pl. XXXI, figs. 10-1 (1910).

As the typical form.

E. Arctic Occurrence.

2. Devon, etc., Islands: 36, 37 (Su) (in Ehrenberg 1853, p. 524, sub nom. *Zygoceros balaena*[1]).
9. Hudson Strait: 85 (Po) very rare (Polunin 1935, p. 190, sub nom. *Biddulphia balaena*).

Peridineae (Dinoflagellatae)

80. **Ceratium arcticum** (Ehrenb.) Cleve, Göteborgs Kungl. Vetensk. och Vitterhets-Samh. Handl. ser. 4, III, p. 207 (1900).

In our area this is perhaps the most generally dominant of all plankton species.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) common.
2. Devon, etc., Islands: 31-35 (Go) rare; 38-39 (Go) common.
3. N. Baffin: 42-46 (Go) common near land in the deeper layers; also found in most of Nilsson's samples (cf. Aurivillius 1896, p. 211, sub nom. *C. 'tripus* var. *arctica'*).
4. C. Baffin: 64 (Go) very common; 65-69 (Gr) very common; 70-72 (Go) very common.
5. S. Baffin: 80-84 (Go) common.
9. Hudson Strait: 85 (Po) very common.

81. **Ceratium fusus** (Ehrenb.) Dujardin, Hist. Zooph. Infus., Suites à Buffon, p. 378 (1841).

A visitor from temperate regions, reported only from one station in S. Baffin, and there very rare, although it could perhaps be found more often in the southeastern parts of our area later on in the year.

E. Arctic Occurrence.

5. S. Baffin: 82 (Go) very rare.

82. **Ceratium lineatum** (Ehrenb.) Cleve, Kgl. Sv. Vet.-Akad. Handl., XXXII, 3, p. 36 (1899).

As the preceding species.

E. Arctic Occurrence.

5. S. Baffin: 80 (Go) very rare.

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[1] Possibly also in Dickie (1852, pp. cxcvii *et seq.*, sub nom. *Triceratium striolatum*), cf. p. 148. (N.P.)

83. **Ceratium longipes** (Bail.) Gran, Rep. Norw. Fish. and Mar. Invest. II, 5, pp. 52, etc., figs. 1-2 (1902).

As the two preceding species, a rare autumn visitor from temperate regions.

E. Arctic Occurrence.

4. C. Baffin: 64 (Go) very rare.

84. **Ceratium** sp., cf. Grøntved and Seidenfaden 1938 (figs. 51-2).

An interesting form, in our area only reported from one locality.

E. Arctic Occurrence.

3. N. Baffin: 46 (Go) very rare.

85. **Dinophysis acuminata** Claparède & Lachmann, Mém. d. l'Inst. National Genev., VI, p. 408, Pl. XX, fig. 17 (1859).

As to the systematic problems concerning this species, *See* G. and S. 1938.

E. Arctic Occurrence.

4. C. Baffin: 64, 72 (Go) very rare.

86. **Dinophysis acuta** Ehrenberg, Abh. Berl. Akad. 1839, pp. 124, 151, Pl. IV, fig. 14 (1841) [1840].

A rare temperate visitor to the southernmost parts of our area, as yet only found in one locality.

E. Arctic Occurrence.

5. S. Baffin: 80 (Go) very rare.

87. **Dinophysis arctica** Mereschkowsky, Arch. f. Mikr. Anat., XVI, p. 177, Pl. XI, fig. 19 (1879).

A boreal species, but one that is little known in the waters west of Greenland (cf. G. and S. 1938).

E. Arctic Occurrence.

4. C. Baffin: 65-69 (Gr) not common.

88. **Dinophysis norwegica** Claparède & Lachmann, Mém. d. l'Inst. National Genev., VI, p. 407, Pl. XX, fig. 18 (1859).

This is the most common species of *Dinophysis* in our area, although it never occurs in any great numbers.

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) rare.
2. Devon, etc., Islands: 31, 32, 34, 35, 38, 39 (Go) rare.
3. N. Baffin: 42-46 (Go) sparingly; also found in Nilsson's samples (cf. Aurivillius 1896, p. 211).
4. C. Baffin: 64, 71, 72 (Go) rare; and in Nilsson's samples (cf. Aurivillius *l.c.*).

89. **Glenodinium danicum** Paulsen, Medd. Komm. f. Havunders. Ser. Plankt. I, 5, p. 6, fig. 2 (1907).

Under this name have been placed together all small, left-handed, *Glenodinium*-like specimens found in the material collected by the *Godthaab* Expedition. They were always rare, only a few examples being found in each sample, but were widespread in the central parts of our area.

E. Arctic Occurrence.

1. Ellesmere: 26, 27, 29, 30 (Go).
2. Devon, etc., Islands: 32, 38 (Go).
3. N. Baffin: 43, 45 (Go).
4. C. Baffin: 64 (Go).

90. **Glenodinium lenticulum** (Bergh) Schiller, Rabenhorst's Krypt.-Fl. X, 3, 2, p. 103, figs. 95 a-h (1933).

Diplopsalis lenticula Bergh

In this species are included also *Diplopeltopsis minor* (Pauls.) Pavill. and *Peridiniopsis asymmetrica* Mangin. All specimens found by the *Godthaab* Expedition belong to the last-mentioned, and should according to Schiller (*l.c.*) be styled *Glenodinium lenticula* f. *asymmetrica* (Mangin) Schiller. The typical form seems to occur only in the Far North.

E. Arctic Occurrence.

1. Ellesmere: 24, 25, 27-30 (Go) rare.
2. Devon, etc., Islands: 31, 32, 39 (Go) rare.
3. N. Baffin: 42-44, 46 (Go) rare.

91. **Gonyaulax catenata** (Levand.) Kofoid, Univ. Calif. Publ. Zool., VIII, p. 291, Pl. XVIII, figs. 1-7 (1911).

Only found in the northern parts of the area, and never more than a few specimens in each sample.

E. Arctic Occurrence.

1. Ellesmere: 25-27, 29 (Go) rare.
2. Devon, etc., Islands: 32-34, 39 (Go) rare.
3. N. Baffin: 43 (Go) rare.

92. **Gonyaulax scrippsae** Kofoid, Univ. Calif. Publ. Zool., VIII, p. 228, Pl. XIII, figs. 26-7; Pl. XVI, fig. 38 (1911).

Like the foregoing, only found in the northern parts of our area.

E. Arctic Occurrence.

1. Ellesmere: 27-30 (Go) rare.
2. Devon, etc., Islands: 31, 38 (Go) rare.
3. N. Baffin: 42, 43, 46 (Go) rare.

93. **Gonyaulax triacantha**[1] Jørgensen, Bergens Museums Aarbog 1899, No. 6, p. 35 (1900).

In our area collected considerably farther south than the foregoing.

E. Arctic Occurrence.

3. N. Baffin: 45 (Go) rare.
4. C. Baffin: 70 (Go) rare.

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[1] Published with a query but later widely upheld. (N.P.)

94. **Gymnodinium lohmanni** Paulsen, Nordisches Plankt., p. 99, fig. 137 (1908).

This naked species, which is not to be expected in net samples, is recorded only by Gran (1929, p. 20) from his investigations "in the field".

E. Arctic Occurrence.

4. C. Baffin: 68 (Gr) never in great numbers.

95. **Minuscula bipes** (Pauls.) Lebour, Dinoflagellates of Northern Seas, p. 138, Pl. 29, fig. 3 (1925).

Peridinium minusculum Pavillard

This inconspicuous species is possibly often overlooked.

E. Arctic Occurrence.

2. Devon, etc., Islands: 31, 32, 38 (Go) rare.
4. C. Baffin: 64 (Go) rare.

96. **Oxytoxum gracile** Gran, Rapp. Proc.-Verb. Cons. perm. intern. expl. mer., LVI, p. 44, fig. 4 (1929).

This species, like the one before the last, is only recorded by Gran (1929, p. 20), as it is usually not to be observed in net samples.

E. Arctic Occurrence.

4. C. Baffin: 66, 68 (Gr) very rare.

97. **Peridinium brevipes** Paulsen, Nordisches Plankt., p. 108, fig. 151 (1908); *also* Medd. om Grønland, XLIII, p. 313, fig. 13 (1911).

Only found in the northern parts of our area.

E. Arctic Occurrence.

1. Ellesmere: 24-26 (Go) rare.
2. Devon, etc., Islands: 31-33, 35, 38-40 (Go) rare.
3. N. Baffin: 42-44, 46 (Go) rare.
4. C. Baffin: 64, 70, 72 (Go) rare.

98. **Peridinium cerasus** Paulsen, Medd. Komm. f. Havunders. Ser. Plankt. I, 5, p. 12, fig. 12 (1907).

P. globulus Stein var. *quarnerense* Bruno Schröder

Always rare and of sporadic occurrence.

E. Arctic Occurrence.

1. Ellesmere: 28 (Go).
2. Devon, etc., Islands: 31 (Go).
3. N. Baffin: 42 (Go).
4. C. Baffin: 70 (Go).

99. **Peridinium conicoides** Paulsen, Medd. Komm. f. Havunders. Ser. Plankt. I, 3, p. 3, fig. 2 (1905).

A boreal species, always rare in the samples in which it occurs.

E. Arctic Occurrence.

1. Ellesmere: 29, 30 (Go).

2. Devon, etc., Islands: 31 (Go).
3. N. Baffin: 42-44 (Go).
4. C. Baffin: 64 (Go); 67 (Gr); 70-72 (Go).

100. **Peridinium conicum** (Gran) Ostenfeld & Schmidt, Vidensk. Medd. Nat. Foren., p. 174 (1901).

A temperate species, very rare in our area.

E. Arctic Occurrence.

2. Devon, etc., Islands: 39 (Go).
4. C. Baffin: 67 (Gr).

101. **Peridinium curvipes** Ostenfeld, Internat. Counc. for Study of Sea, Publ. Circ. XXXIII, p. 15, fig. 128 (1906).

This seems to be an arctic species, but is always very rare in our area. For a discussion of its relationship with *P. subcurvipes* Lebour, *See* G. and S. 1938.

E. Arctic Occurrence.

1. Ellesmere: 25, 29 (Go).
2. Devon, etc., Islands: 31, 39, 40 (Go).
3. N. Baffin: 42-46 (Go).

102. **Peridinium depressum** Bailey, Smiths. Contr. Knowl., VII, p. 12, figs. 33-4 (1855).

The most common species of *Peridinium* in our area, and probably the one that occurred in most of Nilsson's samples (*See* Aurivillius 1896, p. 211, and cf. G. and S. 1938).

E. Arctic Occurrence.

1. Ellesmere: 24-30 (Go) locally rather common.
2. Devon, etc., Islands: 31-35, 38, 39 (Go) sparingly.
3. N. Baffin: 42-44 (Go) sparingly.
4. C. Baffin: 64 (Go) rare; 65-69 (Gr) rather common; 70-72 (Go) rather common.
5. S. Baffin: 80-84 (Go) common towards the east.

103. **Peridinium islandicum** Paulsen, Medd. Komm. f. Havunders. Ser. Plankt. I, 1, p. 23, fig. 7 (1904).

Perhaps a relatively temperate species, occurring where the currents mingle.

E. Arctic Occurrence.

1. Ellesmere: 29 (Go) rare.
2. Devon, etc., Islands: 32, 33, 35, 38, 39 (Go) rare except in 35, where several specimens were observed.
3. N. Baffin: 42 (Go) rare.

104. **Peridinium laticeps** Grøntved & Seidenfaden, Medd. om Grønland, LXXXII, 5, p. 188, fig. 63 (1938).

An arctic species, hitherto only found in the waters west of Greenland (cf. the distribution map, *op. cit.*, fig. 62).

E. Arctic Occurrence.

1. Ellesmere: 24 (Go) rare.

2. Devon, etc., Islands: 35, 39 (Go) rare.
3. N. Baffin: 46 (Go) rare.
4. C. Baffin: 71, 72 (Go) rare.

105. **Peridinium leonis** Pavillard, Trav. de l'Inst. Bot. Univ. Montpellier, sér. mix. mém. 4, p. 32, fig. 6 (1916).

A temperate species, only observed in one sample from our area.

E. Arctic Occurrence.

4. C. Baffin: 72 (Go) a few specimens.

106. **Peridinium monacanthum** Broch, Kgl. Sv. Vet.-Akad. Handl., XLV, 9, p. 50, fig. 25 (1910).

A truly arctic species, only found in the cold water-masses (cf. G. and S. 1938).

E. Arctic Occurrence.

1. Ellesmere: 26-28 (Go) rare.
2. Devon, etc., Islands: 31 (Go) rare.
3. N. Baffin: 42-44 (Go) rare.

107. **Peridinium oceanicum** Vanhöffen, Bibl. Bot., XLII, p. 26 (1897); *also* in Drygalski, Grönland Expedition II, Pl. V, fig. 2 (1897).

A temperate species, within our area so far only found at one point in the autumn.

E. Arctic Occurrence.

4. C. Baffin: 64 (Go) rare.

108. **Peridinium ovatum** (Pouchet) Schütt, Ergebn. Plankton-Exped. Humboldt-Stift. IV, Pl. XVI, fig. 49 (1895).

A boreal species, towards the north often represented by f. *arcticum* (*See* below).

E. Arctic Occurrence.

1. Ellesmere: 27-29 (Go) very rare.
2. Devon, etc., Islands: 38, 39 (Go) rare.
4. C. Baffin: 64, 70, 72 (Go) rare except in the deeper layers in 72.
5. S. Baffin: 80, 83, 84 (Go) rare.

f. **arcticum** Grøntved & Seidenfaden, Medd. om Grønland, LXXXII, 5, p. 194, fig. 67 (1938).

This arctic form is rather common in the waters north of Davis Strait, although it never occurs in any great numbers (cf. the distribution map given by G. and S. 1938).

E. Arctic Occurrence.

1. Ellesmere: 24-26, 28-30 (Go) rare.
2. Devon, etc., Islands: 32, 33, 35, 38, 39 (Go) rare except in 35.
3. N. Baffin: 42-44, 46 (Go) rare.

109. **Peridinium pallidum** Ostenfeld, in Wandel, Knudsen & Ostenfeld, Iagtt. Overfl. Temp. Salth. og Plankton i 1898, p. 60 (1899).

This species was rather often found, although only a few specimens occurred in each sample.

E. Arctic Occurrence.

1. ELLESMERE: 24, 26-39 (Go) sparingly.
2. DEVON, ETC., ISLANDS: 31-35, 38-40 (Go) rare.
3. N. BAFFIN: 42-46 (Go) rare towards the land, but somewhat more plentiful in 46.
4. C. BAFFIN: 64 (Go) rare; 65-67, 69 (Gr) sparsely; 70-72 (Go) sparingly.
5. S. BAFFIN: 81-84 (Go) rare.

110. **Peridinium parallelum** Broch, Nyt Mag. f. Naturv., XLIX, p. 153, fig. 2 (1906).

A temperate species, only observed towards the southeastern corner of our area. As to the systematic value of the entity, *See* G. and S. 1938.

E. Arctic Occurrence.

5. S. BAFFIN: 80, 82, 84 (Go) rare.

111. **Peridinium pellucidum** (Bergh) Schütt, Ergebn. Plankton-Exped. Humboldt-Stift. IV, Pl. XIV, fig. 45 (1895).

Widespread in our area, although never found in great numbers.

E. Arctic Occurrence.

1. ELLESMERE: 24-30 (Go) sparingly.
2. DEVON, ETC., ISLANDS: 31-34, 38, 39 (Go) rare.
3. N. BAFFIN: 42-46 (Go) sparingly.
4. C. BAFFIN: 64, 70-72 (Go) sparingly.

112. **Peridinium roseum** Paulsen, Medd. Komm. Havunders. Ser. Plankt. I, 1, p. 23, fig. 9 (1904).

Scattered throughout the eastern part of our area.

E. Arctic Occurrence.

1. ELLESMERE: 26-30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-34, 38, 39 (Go) rare.
3. N. BAFFIN: 42-44, 46 (Go) rare.
4. C. BAFFIN: 72 (Go) rare.
5. S. BAFFIN: 80 (Go) rare.

113. **Peridinium subinerme** Paulsen, Medd. Komm. Havunders. Ser. Plankt. I, 1, p. 24, fig. 10 (1904).

Of scattered occurrence.

E. Arctic Occurrence.

1. ELLESMERE: 27, 28, 30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31-33, 38, 39 (Go) rare.
3. N. BAFFIN: 42-44 (Go) rare.
4. C. BAFFIN: 70, 72 (Go) rare.

114. **Peridinium thorianum** Paulsen, Medd. Komm. Havunders. Ser. Plankt. I, 3, p. 3, fig. 1 (1905).

A rare species.

E. Arctic Occurrence.

1. Ellesmere: 25-30 (Go) rare.
2. Devon, etc., Islands: 32, 39 (Go).
3. N. Baffin: 46 (Go).
4. C. Baffin: 72 (Go).

115. **Phalacroma rotundatum** (Clap. & Lachm.) Kofoid & Michener, Bull. Mus. Comp. Zool. Harvard College, LIV, p. 290 (1911).

This species seems to be rarer in our area than along the west coast of Greenland (cf. G. and S. 1938, fig. 73, map of distribution).

E. Arctic Occurrence.

1. Ellesmere: 24, 25, 29 (Go) rare.
3. N. Baffin: 42 (Go) rare.
4. C. Baffin: 72 (Go) rare.

116. **Pouchetia** Schütt (*Warnowia* Lindemann)

Forms belonging to this genus, which will as a rule only be observed when studying living or very well preserved material, have been recorded by Gran (1929, p. 20) from all his stations.

E. Arctic Occurrence.

4. C. Baffin: 64-69 (Gr) sparsely.

117. **Protoceratium reticulatum** (Clap. & Lachm.) Bütschli, in Bronn, Klass. u. Ord. Tierr. I, p. 1007, Pl. LII, fig. 2 (1885).

Not occurring in the true arctic water-masses.

E. Arctic Occurrence.

2. Devon, etc., Islands: 39 (Go) rare.

118. **Torodinium robustum** Kofoid & Swezy, Mem. Calif. Univ., V, p. 391, fig. ii, 1-3, Pl. IV, fig. 49 (1921).

A fragile species, recorded only by Gran (1929, p. 21).

E. Arctic Occurrence.

4. C. Baffin: 65, 67 (Gr) sparingly.

FLAGELLATAE AND SILICOFLAGELLATAE

119. **Dinobryon pellucidum** Levander, Acta Soc. pro Fauna et Flora Fennic., XII, 2, p. 31, Pl. II, fig. 1 (1894).

This species probably has a wider distribution in our area than is suggested by the records given below (cf. G. and S. 1938).

E. Arctic Occurrence.

1. Ellesmere: 28 (Go).
2. Devon, etc., Islands: 31 (Go).
3. N. Baffin: (Go).

120. **Phaeocystis pouchetii** (Hariot) Lagerheim, Bot. Not., p. 32 (1893).

A "spring form," whose growth is possibly restricted to the East Greenland current; from its great maximum in April-May near Cape Farewell the species may spread over a wide area (cf. G. and S. 1938, figs. 74, 88).

E. Arctic Occurrence.

1. ELLESMERE: 25, 26 (Go) rare.
2. DEVON, ETC., ISLANDS: 33 (Go) rare.
5. S. BAFFIN: 80-84 (Go) common only near land.

121. **Distephanus speculus** (Ehrenb.) Haeckel, Rept. Voy. Challenger, Zool., XVIII, p. 1565 (1887).

var. **regularis** Lemmerm., Ber. Deutsch. Bot. Gesellsch., p. 263, Pl. XI, figs. 12-3 (1901).

This variety seems to be most common in currents coming from relatively temperate zones (cf. G. and S. 1938, fig. 75, map of distribution).

E. Arctic Occurrence.

1. ELLESMERE: 24, 26, 27, 30 (Go) rare.
2. DEVON, ETC., ISLANDS: 31, 32, 34, 38, 40 (Go) rare; 39 (Go) sparingly.
3. N. BAFFIN: 42-45 (Go) rare; 46 (Go) sparingly; 47, "57-62" (Ni).
4. C. BAFFIN: 64 (Go) sparingly; 66, 68, 69 (Gr) sparsely; 70-72 (Go) sparingly; "73-79" (Ni) (cf. Aurivillius 1896, p. 211).
5. S. BAFFIN: 80 (Go) rare.

var. **polyactis** (Ehrenb.) Lemmerm., Ber. Deutsch. Bot. Gesellsch., p. 265, Pl. XI, fig. 17 (1901).

Rather sporadic, as a rule in company with the preceding variety.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: 40 (Go) rare.
3. N. BAFFIN: 45 (Go) rare.
4. C. BAFFIN: 72 (Go) rare.

var. **septenarius** (Ehrenb.) Jørgensen, Bergens Museums Aarbog 1899, No. 6, p. 50 (1900).

As the preceding variety.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: 33, 34, 39 (Go) rare.
4. C. BAFFIN: 64, 72 (Go) rare.

CONCLUSION

The hydrographical conditions within our area are rather poorly known. During recent years, however, several expeditions have been at work in Davis Strait and Baffin Bay. Notable among these are the American Coast Guards' ships, which have made investigations along the coast of Labrador and southeastern Baffin; their results have been published by Smith, Soule and Mosby (1937). Farther north the Danish *Godthaab* Expedition of 1928 made investigations northwards to Smith Sound; the hydrographical results of this enterprise have unfortunately not been published, but the more important facts are discussed by Grøntved and

Seidenfaden (1938) in connection with the results of the plankton investigations. For exact maps the reader is also referred to that paper (especially to figs. 81, 85, 89, 92, and 104), although the more important currents are shown in Figure 2 of the present publication.

It will be seen that generally speaking we have a south-moving current along the western side of the basin. North of Davis Strait this is called the Baffin Land current. It has come into existence with the admixture of masses of water issuing from the great sounds and others arriving from the Greenland side; the latter masses originally moved north along the Greenland coast but now return, together with the arctic water. South of Davis Strait the stronger south-going current is called the Labrador current. On the average some two-fifths of its water consists of the Baffin Land current, the rest coming from the east as returning branches of the original north-going West Greenland current (according to Smith, Soule and Mosby 1937).

In this way the plankton in our area receives its character—partly from the more or less local water-masses of the sounds and coasts, partly from the warmer water originating in the south. Roughly speaking, we have on one hand an arctic and on the other a temperate element, each of which influences the composition of the plankton; their relative importance varies according to the season.

Unfortunately we have no knowledge of the Canadian Eastern Arctic plankton of spring and early summer. It must, however, be supposed that the appearance of the plankton at this time of year, the currents being still very weak, is determined by local conditions (especially the melting of the ice), and that the plankton consists of the same types as in other but climatically comparable parts of the Arctic, e.g., *Fragilaria* and other ribbon-shaped or genuine ice forms.

At the beginning of the summer and during midsummer the south-moving currents will probably be first influenced by the arctic water-masses, and the plankton, accordingly, may be rather different from that characterizing the north-going West Greenland current. The type-species of this south-moving arctic water is *Ceratium arcticum,* although south of the Holsteinsborgridge[1] *Coscinodiscus centralis* is also important. During the summer this arctic plankton differs so distinctly from that of the West Greenland current, the main components of which are *Chaetoceros decipiens* and other members of this great genus, that it is possible by means of the forms present to distinguish between the different water-masses (cf. Grøntved and Seidenfaden 1938, figs. 88, 93, 94).

In late summer a stronger admixture of temperate water occurs, so that the plankton of the area as a whole takes on a more familiar appearance. At the same time, the north-moving temperate currents along the southwest coast of Greenland increase. The result is that in late autumn, on account of the west-going and ultimately returning branches of this current, we find a plankton flora and fauna with a great many temperate species. These are as a rule rather rare, but none the less indicate distinctly the influence of the temperate water-masses along the southeast coast of Baffin and the northeast coast of Labrador. They may also suggest such an influence much farther north.

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[1] **This is the submarine range that extends from the easternmost part of central Baffin eastwards towards the adjacent coast of West Greenland, which is known to the Danes as the *Holsteinsborg Distrikt.* (N.P.)**

This is a mere brief summary of the development within our area. I have omitted many details, the data being, moreover, as yet relatively meagre. Thus it would be of especial interest to have regular investigations made all the year round, and at different fixed stations. As an example of work that should surely repay extension it may be mentioned that the collections made by Dr. Polunin off Akpatok Island in 1931, towards the end of August, clearly show that pronounced arctic water containing many plankton species of a northern origin flows out of Hudson Strait, while at the same time *temperate water penetrates into it.*[1] But of course it is not possible to state how far this water goes and at what time of the year its flow is strongest; as waters have to be traversed by all ships using the new northern "grain route" to Europe, the elucidation of these questions may have considerable practical importance as well as academic interest.[2]

In conclusion, I shall attempt to make a division of the forms recorded above as occurring in the Canadian Eastern Arctic, classifying each according to whether it is truly arctic or relatively temperate in its geographical relationships. The Peridineae and Flagellatae have not been included, as we know too little about the occurrence of these groups within the area. Even the division of the Diatomeae must be considered preliminary, as doubt exists where the material is scant.

(1) Typical arctic forms found mainly in the colder waters, most commonly during the spring and towards the north:

Achnanthes taeniata
Amphiprora hyperborea
Bacteriosira fragilis
Chaetoceros fragilis
C. karianus
C. septentrionalis
C. wighamii
Coscinodiscus curvatulus var. *karianus*
Fragilaria islandica
F. oceanica
Melosira arctica
Navicula pelagica
N. septentrionalis
N. vanhoffenii
Nitzschia closterium
N. frigida

(2) Boreal forms found in most parts of the area, but most common in midsummer and towards the east:

Asteromphalus robustus
Chaetoceros atlanticus
C. borealis
C. compressus
C. debilis
C. decipiens
C. densus
C. diadema
C. furcellatus
C. gracilis
C. laciniosus
C. mitra
C. socialis
Coscinodiscus centralis
Coscinosira polychorda
Detonula confervacea
Eucampia zodiacus
Leptocylindrus danicus
L. minimus
Navicula granii
Nitzschia seriata
Podosira glacialis
Rhizosolenia hebetata f. *hiemalis*
R. hebetata f. *semispina*
Thalassiosira bioculata
T. gravida
T. hyalina
T. nordenskioldii

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[1] Mr. Seidenfaden always gives the impression of assuming that this "temperate water" comes west from the Atlantic, but I feel this still needs proving. Might not the southern forms have come *east* from Hudson Bay? This great "inland ocean" stretches southwards nearly to the 51st parallel (in James Bay) and, even if its waters in the south are largely fresh, has here and for some distance to the north around the coasts a long and often unpleasantly hot summer. However, contrast footnote (2) and note that Dr. A. G. Huntsman (*in litt.*) quotes Dr. V. M. Davidson as agreeing that the warm waters move northward and westward from Greenland rather than out from Hudson Bay. (N.P., November 1946.)

[2] In July 1934, R.M.S. *Nascopie*, beset by ice and fog near Port Burwell, drifted westwards across Ungava Bay to within a few miles of the northern coast of Akpatok Island. In July and August, 1946, during extensive flights over and reconnaissances about Hudson Bay and Foxe Basin, I got the *impression* of ice clearance towards the northeast in the former and southward in the latter. Recently Dr. Max Dunbar has informed me that the zooplankton and shore fauna afford further evidence of the penetration of Atlantic water westwards at least halfway along Hudson Strait. (N.P., October 1946.)

(3) As a transition between the preceding and the following groups, a few species may be mentioned that are most common in temperate waters, but in our area may occasionally be found rather far towards the north:

Chaetoceros concavicornis
C. convolutus
C. curvisetus
Chaetoceros teres
Rhizosolenia styliformis
Thalassiothrix longissima

(4) More or less strictly temperate forms, as a rule only occurring in the southeastern parts of the area, and nearly always found in the autumn only:

Asteromphalus heptactis
Chaetoceros constrictus
C. pseudocrinitus
C. radicans
Coscinodiscus excentricus
C. stellaris
Dactyliosolen antarcticus
Fragilaria nana
Nitzschia delicatissima
Rhizosolenia alata f. *inermis*
(*R. setigera*)
Streptotheca tamensis
Thalassiosira decipiens
T. rotula
T. subtilis

(5) Finally, mention should be made of the other forms noted in the list, which are not real plankton species but rather ice or littoral forms:

Achnanthes hyperborea
Actinocyclus alienus var. *arcticus*
Biddulphia aurita
Cocconeis spp.
Coscinodiscus curvatulus var. *minor*
C. lacustris var. *hyperboreus*
C. radiatus
Cyclotella striata
Fragilaria cylindrus
F. striatula
Gomphonema spp.
Grammatophora spp.
Hyalodiscus spp.
Isthmia nervosa
Melosira moniliformis
M. sulcata
Navicula spp.
Pleurosigma spp.
Rhabdonema adriaticum
R. arcuatum
R. minutum
Thalassiosira bioculata var. *exigua*
Triceratium arcticum
T. arcticum f. *balaenum*

It is to this last-mentioned group that the extra species in the lists of Diatomeae in the earlier papers dealing with our area, viz., Dickie (1852, pp. cxcv *et seq.*, and 1880, p. 9), Ehrenberg (1853, p. 523), and Cleve (1884, p. 313, and 1896, p. 18) should be added.

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3. FRESHWATER DIATOMEAE (BACILLARIOPHYTA)

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INTRODUCTION

In preparing this report on the freshwater diatoms of the Canadian Eastern Arctic, it has unfortunately not proved possible to examine all of the available material in the period between the time when Dr. Polunin asked me to undertake the work and the time when the manuscript had to be completed. Consequently, the account cannot be regarded as anything like complete. At first I hoped to include all the diatoms, other than the planktonic forms treated by Seidenfaden, but as this was impossible it was decided to concentrate on the freshwater species. However, in order that a complete record of the literature on the diatoms of the area under discussion might be included in this work, all references to them, other than those dealing solely with planktonic forms, will first be given.

The earliest reports of the group that concern us directly are by Dickie (in Sutherland 1852, II, Appendix, pp. cxcv-cc). These are based on material collected by Sutherland during the searching expedition in the ships *Lady Franklin* and *Sophia*. None of the gatherings is freshwater. Some of the material brought back by this expedition was also seen by Ehrenberg (1853, p. 522), but this again was marine.

O'Meara (1862, p. 59) gives a list of the diatoms occurring in four samples obtained during M'Clintock's voyage in the *Fox*. As O'Meara does not indicate from which sample each species came, and as one sample was collected outside our area and another is "from Arctic Regions, without any particulars", I have not included the records of such freshwater species as he mentions. O'Meara's collection is in the British Museum (Natural History), but unfortunately there has not been time to examine such relevant slides as it may contain.

Dickie (1866, pp. 235 *et seq.*) published an account of some Algae collected by James Taylor, medical officer to a whaler, in Cumberland Sound, apparently in 1861.[1] Dickie mentions no diatoms, but I have examined two slides from his collection (B.M.25020 and 25083),[1] which are labelled "Cumberland Sound, Fresh water, Mr. Taylor", and these were presumably collected at the same time.

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[1] Taylor's plant collecting in and near our area appears to have commenced in 1856 and ceased in 1862. (N.P.)

The next collection of the group in our area appears to have been that made by the *Alert* and *Discovery* Expedition in 1875-6. This material has been recorded in various places. There is a list of a few species exhibited by O'Meara (1878, p. 214) at a meeting of the Dublin Microscopical Society. These are all marine. The collection was worked over by Dickie who gave a list of the genera found, and the number of species of each genus, in the appendix to Nares's (1878, II, p. 325) account of the expedition. Dickie published a detailed list elsewhere (1878, pp. 9 *et seq.*). Only four of the gatherings that he examined were from fresh water. I have examined one of Dickie's slides, B.M. 24891, of material from Discovery Bay collected by this expedition; this has enabled me to confirm some of his reports and add others. There is also a slide of Discovery Bay material in the British Museum (Natural History), B.M.6077 (from the slide collection of Julien Deby) that almost certainly forms part of this material. Cleve also had four samples of diatoms collected by this expedition; he recorded their contents in two places (Cleve 1883a and 1883b). Only one of these samples was freshwater, from Cape Sabine, and this is discussed in Cleve 1883a. There is a slide of Cleve's from this material in the British Museum (Natural History), B.M. 29145, and I have examined it and confirmed part of his records.

No more diatoms, other than plankton, seem to have been collected in the area until Polunin obtained some on Akpatok Island in 1931 while on an Oxford University Exploration Club expedition. These were identified by Hendey (Polunin 1934, p. 201), but he unfortunately did not make permanent preparations and I have, therefore, been unable to verify these records. Only six freshwater species are reported, and it seems likely that if Polunin's freshwater plant collections are further examined for diatoms, many more species will be found.

The material examined in preparing this paper has for the most part been that collected by Dr. Nicholas Polunin in 1936. Of this I received, on loan from the Farlow Herbarium, Harvard University, 36 tubes reported by Dr. Whelden to contain diatoms. For this I am much indebted to Dr. D. H. Linder, Curator of the Farlow Herbarium. Of these gatherings, 26 were from fresh water, but there has been time to examine only 15. These, however, include at least one from each locality from which freshwater diatoms were obtained. The slides that were prepared for my investigations are preserved in the British Museum (Natural History), and the remainder of the cleaned diatom material is being returned to Harvard along with the untreated Algae. Six slides from the collection of the British Museum (Natural History) have also been examined. There is more material there, however, and I hope at a later date to examine all the other available material from our area and report on it. The chief reason why it has only been possible to examine so few samples is the richness in species of most of them. Few have yielded less than 30, and one at least more than 70. The total number of freshwater diatom species so far known to occur in the area is 192.

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[1] Numbers prefixed by "B.M." are the serial numbers of the microscope slides in the Diatom Collection of the British Museum (Natural History).

The following is a list of the samples examined, with all the available data concerning them.[1]

Discovery Harbour, Ellesmere Island. "On stone in fresh water"; coll. Hart (Nares expedition) B.M.24891. No details, but probably same collection, B.M.6077.

Cape Sabine, Ellesmere Island. Coll. Nares expedition. B.M.29145.

Craig Harbour, Ellesmere Island. "Fresh water"; coll. Polunin 5-6. IX. 1936, W 30.

Dundas Harbour, Devon Island. "Red-brown investment of mud . . . brackish lagoon"; coll. Polunin 7.IX.1936, W 51. "Red-brown Alga in shallow pool"; coll. Polunin 7.IX.1936, W 67.

Pond Inlet, Baffin Island. "Green filaments in ice in frozen stream"; coll. Polunin 4.IX.1936, W 46.

Arctic Bay, Baffin Island. "Red-brown and green muck on . . . mud, freshwater"; coll. Polunin 8-11.IX.1936, W 14. "Greenish-brown flocculent layer around stems of *Carex aquatilis* var. *stans* in stream; shallow water"; coll. Polunin 8-11.IX.1936, W 55.

Clyde, Baffin Island. "Scrapings off rocks; freshwater lake; brown or reddish"; coll. Polunin 15.IX.1936, W 148.

Islands in Cape Hooper Harbour; B.M.1904. Cape Hooper is at the southern extremity of Home Bay, i.e., at the northwest end of Cumberland Peninsula. It is impossible to say by whom this material was collected. The slide forms part of the collection of R. K. Greville who died in 1866, and it is labelled in his hand.

Cumberland Sound, Baffin Island. "Fresh water"; coll. Taylor 1861, B.M.25020, 25083.

Lake Harbour, Baffin Island. "Brown deposit, edge of lake"; coll. Polunin 27.VIII.1936, W 16. "Green slime and dark-brown bubbles on lake bottom"; coll. Polunin 26.VII.1936, W 118.

Cape Dorset, Baffin Island. "Freshwater stream"; coll. Polunin 25.VIII.1936, W 143.

Burwell, Labrador. "Bottom deposit and moss, small pool"; coll. Polunin 23-25.VII.1936, W 61. "Long algal tassels in fast stream"; coll. Polunin 23-25.VII.1936, W 129.

Sugluk, Quebec. "Green filamentous Algae, etc."; coll. Polunin 31.VII.1936, W 109.

Wolstenholme, Quebec. "Algae in bed of freshwater stream near late snow"; coll. Polunin 24.VIII.1936, W 52.

Hudson's Bay Company Post, South Bay in Southampton Island. "Brownish-green slimy Alga on lake bottom"; coll. Polunin 22.VIII.1936, W 5.

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[1] Polunin's samples were apparently not all supplied with field numbers, and the numbers used are, therefore, those arbitrarily assigned to his tubes by Whelden. These have been prefixed by the letter W to distinguish them from Polunin's own series of field numbers.

Karsten's (1928) arrangement of the group has been followed in this paper, except that some genera which he includes in *Navicula* have been considered as separate, viz., *Pinnularia, Caloneis, Neidium, Stauroneis,* and *Diploneis.* They follow the genus *Navicula* in the order given. The species of each genus are placed in alphabetical order. I have throughout endeavoured to bring the nomenclature of species into accordance with the International Rules (cf. Briquet 1935), and this has necessitated a number of name-changes. A strict observance of the rules would also have involved changes in the names of genera. I have not, however, felt justified in doing this as such changes would probably soon be rendered unnecessary by the conservation of the names now generally in use. In the matter of varieties I have acted throughout on the principle that when a group, or groups, is recognized to be varietally but not specifically distinct from the nomenclatural type of a species, this species is to be regarded as consisting of two or more varieties—one (the first described) including the type of the species, and the other or others consisting of the form or forms regarded as distinct. All these varieties are to have varietal names, and, accordingly, I have created a var. *typicus* to supply the deficiency where there was not already a varietal epithet available. In certain cases the type variety of a species has been given in another species a varietal epithet that is most inappropriate. Examples are *Cymbella angustata* var. *hybrida* and *Cymbella scotica* var. *incerta,* both of which are the type varieties of their species. The limitation of the principle of priority in such cases may have to be considered, but in the present paper the rules as they stand have been followed.

In conclusion, I take this opportunity of acknowledging my gratitude to my colleagues Messrs. Geoffrey Tandy and J. E. Dandy for advice on nomenclatural problems, and to the former also for assistance in drawing up the Latin diagnoses of new forms.

In the systematic part that follows, seven families of diatoms are represented, viz.:

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Achnanthaceae **190**
Naviculaceae **192**
Epithemiaceae **222**
Nitzschiaceae **223**

LIST OF SPECIES

DISCACEAE

1. **Melosira dendroteres** (Ehrenb.) *n. comb.*

Liparogyra dendroteres Ehrenberg in [1] Ber. kgl. Akad. Wiss. Berl. 1848, p. 219 (1848).

var. **roeseana** (Rabenh.) *n. comb.*

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[1] For the full significance and correct usage of "ex," "apud," and "in," *See* "International Rules of Botanical Nomenclature," Article 48 (Briquet 1935), and cf. p. 8.

Melosira roeseana Rabenhorst, Süssw.-Diat. für Freunde der Mikroskop, p. 13, Pl. X, suppl. fig. 5 (Leipzig 1853).

This change of name has had to be made to bring the nomenclature of this well-known form into conformity with the rule of priority.

E. Arctic Occurrence.

4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.[1]25083.

2. **Melosira granulata** (Ehrenb.) Ralfs apud[2] Pritchard, Hist. Infus. ed. 4, p. 820 (London 1861).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B)[3] W 51.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

3. **Melosira sulcata** (Ehrenb.) Kützing, Die kies. Bacill., p. 55 (Nordhausen 1844).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.

4. **Cyclotella antiqua** W. Smith, Syn. Brit. Diat. I, p. 28, Pl. V, fig. 49 (London 1853).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine* (Nares expedition ex Cleve 1883a, p. 314); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B)W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

5. **Cyclotella stelligera** Cleve & Grunow ex Van Heurck, Syn. Diat. Belg., Pl. XCIV, figs. 22-7 (Anvers 1882).[4]

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

6. **Stephanodiscus astraea** (Ehrenb.) Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 114 (1880).

E. Arctic Occurrence.

8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

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[1] Cf. footnote on p. 179. Localities are again given in *italics* in this paper in conformity with Dr. Whelden's. (N.P.)

[2] *See* footnote on p. 181.

[3] Cf. page 7. (N.P.)

[4] I have regarded any published figure of a diatom from which the species can be determined as a "figure with analyses showing essential characters" within the meaning of Art. 44 of the Rules (Briquet 1935).

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7. **Tabellaria fenestrata** (Lyngb.) Kützing, Die kies. Bacill., p. 127 (Nordhausen 1844).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

8. **Tabellaria flocculosa** (Roth) Kützing, Die kies. Bacill., p. 127 (Nordhausen 1844).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

9. **Grammatophora serpentina** Ehrenberg in Ber. kgl. Akad. Wiss. Berl. 1844, p. 203 (1844).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077.

10. **Meridion circulare** (Grev.) Agardh, Consp. Crit. Diat., p. 40 (Lundae 1831).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M. 6077, 24891 (cf. Dickie 1878, p. 11).
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F, B) W 46.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.

11. **Diatoma tenue** Agardh, Algarum Decas prima, p. 15 (Lundae 1812).

var. **pachycephalum** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. L, fig. 15 (Anvers 1881).

E. Arctic Occurrence.

1. ELLESMERE: *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314, sub nom. *Diatoma tenue* var. *elongatum*).
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

12. **Fragilaria brevistriata** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XLV, figs. 31-4 (Anvers 1881).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

13. **Fragilaria construens** (Ehrenb.) Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, XII, p. 371 (1862).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

14. **Fragilaria pinnata** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 415, Pl. III, 6, fig. 8 (1843).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) 118, 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

15. **Fragilaria vaucheriae** (Kütz.) Boye Petersen in Bot. Notis. 1938, p. 167 (1938).

var. **capitellata** (Grunow apud Van Huerck) *n. comb.*

Synedra capitellata Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XL, fig. 26 (Anvers 1881).

Synedra vaucheriae (Kütz.) Kützing var. *capitellata* (Grunow apud Van Huerck) Cleve in Jour. Linn. Soc., Bot., XX, p. 314 (1883).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine* (Nares expedition ex Cleve 1883a, p. 314).

16. **Synedra acus** Kützing, Die kies. Bacill., p. 68, Pl. XV, fig. 7 (Nordhausen 1844).

var. **mesoleia** (Grunow) Østrup, Danske Diat., p. 178 (Kjøbenhavn 1910).

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

17. **Synedra amphicephala** Kützing, Die kies. Bacill., p. 64, Pl. III, fig. 12 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

18. **Synedra minuscula** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXXIX, fig. 13 (Anvers 1881).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

19. **Synedra pulchella** (Ralfs) Kützing, Die kies. Bacill., p. 68 (Nordhausen 1844).

E. Arctic Occurrence.

1. ELLESMERE: *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314, sub nom. "*Synedra pulchella* var. *saxonica?*").
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

20. **Synedra tabulata** (Agardh) Kützing, Die kies. Bacill., p. 68 (Nordhausen 1844).

var. **delicatula** (Grunow) *n. comb.*

Synedra affinis Kützing var. *delicatula* Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 105, Pl. VI, fig. 115 (1880).

This is the earliest varietal epithet applying to the type variety of the species and must, therefore, be taken up for it.[1]

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **obtusa** (Arnott ex Van Huerck) *n. comb.*

Synedra affinis Kützing var. *obtusa* Arnott ex Van Huerck, Syn. Diat. Belg., Pl. XLI, figs. 12, 19 (Anvers 1881).

Synedra affinis var. *fasciculata* (Agardh) Van Huerck, Syn. Diat. Belg., p. 153 (Anvers 1885).

The varietal epithet *fasciculata,* which is commonly used for this entity, is antedated as such by the one used here, which appeared in the legend of Plate XLI of Van Huerck's Synopsis. The use of *fasciculata* as a varietal epithet dates from the text of the same work, which was issued 4 years later.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

21. **Synedra ulna** (Nitzsch) Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1831, p. 87 (1832).

var. **amphirhyncus** (Ehrenb.) Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, XII, p. 397 (1862).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

var. **genuina** Grunow *l.c.*

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[1] Cf. p. 181. (N.P.)

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay). Polunin Aug. 1936 (F,B) W 5.

var. **recta** (Kütz.) *n. comb.*

Synedra biceps Kützing var. *recta* Kützing, Die kies. Bacill., p. 67, Pl. XXX, fig. 29 (Nordhausen 1844).

Synedra ulna var. *biceps* (Kützing) v. Schönfeldt (1913).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

22. **Ceratoneis arcus** (Ehrenb.) Kützing, Die kies. Bacill., p. 104 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.6077 and 24891 (cf. Dickie 1878, p. 11, sub nom. *Eunotia arcus*)[1]; *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.

EUNOTIACEAE

23. **Eunotia arcus** Ehrenberg, Die Infus., p. 191, Pl. XXI, fig. 22 (Leipzig 1838).

Dickie (1878, p. 11) reports this species from three localities in Ellesmere Island, but probably erroneously in all cases—*See* footnote below, referring to *Ceratoneis arcus.*

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

24. **Eunotia bigibba** Kützing, Spec. Alg., p. 6 (Lipsiae 1849).

var. **pumila** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXXIV, fig. 27 (Anvers 1881).

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

25. **Eunotia curvata** (Kütz.) Lagerstedt in Kgl. Sv. Vet.-Akad. Förhandl. 1884, 2, p. 61 (1884).

Eunotia lunaris (Ehrenb.) Grunow apud Van Huerck (1881) *non* Brébisson ex Rabenhorst (1864).

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[1] Cleve (1883a, p. 314) suggests that all Dickie's reports of *Eunotia arcus* refer to this species. I have been unable to check the report from "*Alert's* winter-quarters" (No. 23 of Dickie *l.c.*) as no such material was to be found in his slide collection. The Egerton Valley report (No. 27 of Dickie *l.c.*), as examination of the material shows, refers to *Eunotia curvata* (q.v.) and not to the present species.

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852, *See* footnote on p. 186.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25083.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

26. **Eunotia diodon** Ehrenberg, Die Infus., p. 192 (Leipzig 1838).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852 (cf. Dickie 1878, p. 11).
4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

27. **Eunotia exigua** (Bréb. ex Kütz.) Rabenhorst, Flora Eur. Alg., I, p. 73 (Lipsiae 1864).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

28. **Eunotia fallax** A. Cleve in Bih. kgl. Sv. Vet.-Akad. Handl., XXI, 3, 2, p. 33, Pl. I, fig. 35 (1895).

var. **gracillima** Krasske ex Hustedt in Pascher, Süsswasser-Flora Mitteleuropas, X, ed. 2, p. 178, fig. 227 (Jena 1930).

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

var. **typica** *n. var.*[1]

Eunotia fallax A. Cleve *l.c.*

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

29. **Eunotia glacialis** Meister, Beitr. Krypt.-Flora Schweiz, IV, 1, p. 85, Pl. X, figs. 2-3 (Bern 1912).

Eunotia gracilis (Ehrenb.) Rabenhorst (1864), *non* W. Smith (1853).

Meister's name for this species has had to be taken up because *Eunotia gracilis,* the name by which it is usually known, is a later homonym.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.

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[1] Mr. Ross considers that the two or more varieties of a species are of equal taxonomic rank, and has, therefore, always placed them in alphabetical order. He also holds that a species includes all the varieties that are recognizable within it, and that a specific epithet should, therefore, be applied to the whole species including its varieties.

30. **Eunotia lapponica** Grunow ex A. Cleve in Bih. kgl. Sv. Vet.-Akad. Handl., XXI, 3, 2, p. 29, Pl. I, figs. 29-30 (1895).

E. Arctic Occurrence.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

31. **Eunotia monodon** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 414, Pl. II, 5, fig. 7, Pl. III, 3, fig. 3 (1843).

E. Arctic Occurrence.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

32. **Eunotia naegelii** Migula, Krypt.-Flora Deutschland, II, 1, p. 203 (Gera 1907).

Eunotia alpina (Naegeli ex Kützing) Hustedt in Schmidt, Atlas der Diat., Pl. CCXCI, figs. 7-8 (Leipzig 1913), *non* Kützing (1844).

E. Arctic Occurrence.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

33. **Eunotia papilio** (Ehrenb.) Hustedt, Naturw. Untersuch. Sarekgebirges in Schwedisch-Lappland III, p. 543 (Stockholm 1924).

E. Arctic Occurrence.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020.

34. **Eunotia parallela** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 414 (1843).

(Plate IX, figure 1)

The specimen on which the record of this species is based is similar to that figured by A. Cleve-Euler (1934, Pl. I, fig. 23c) as a "sporangial form" of this species.

E. Arctic Occurrence.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

35. **Eunotia pectinalis** (O. F. Müller) Rabenhorst, Flora Eur. Alg., I, p. 73 (Lipsiae 1864).

var. **minor** (Kütz.) Rabenhorst *l.c.*, p. 74.

E. Arctic Occurrence.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

var. **stricta** (Rabenh.) Rabenhorst *l.c.*, p. 74.

This is the variety that includes the type of the species.

E. Arctic Occurrence.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

36. **Eunotia perpusilla** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXXIV, fig. 31 (Anvers 1881).

"*Eunotia polydentula* Brun" Hustedt, Rabenhorst's Krypt.-Flora, VII, 2, p. 292 (1932) et auct. nonnull.

Eunotia microcephala Krasske in Hedwigia, LXXII, p. 102 (1932).

This species, known to recent authors as *Eunotia polydentula* (Brun) Hustedt, founded on *Himantidium polydentula* Brun (1880, p. 51), has two varieties, one with rostrate and one with capitate apices. The former includes the type of the species; but the latter, which is the only one to be found in the material from the Canadian Eastern Arctic, has been regarded as the typical variety of *E. polydentula.* This name is illegitimate because it was founded on six species of Ehrenberg's, the epithet of none of which was retained. It is also probable that none of Ehrenberg's six names apply to the present species although Hustedt (*l.c.*) regards *E. tridentula, E. quaternaria,* and *E. quinaria* as doubtful synonyms. However, an examination of Ehrenberg's figures of these species (1843, Pl. II, I, figs. 12, 13, 14) shows them to be of larger forms, 30-40μ long instead of 15-25μ, which lack the characteristic indentation of the ventral margin just proximal to the apices. Brun's description and figure of his *E. polydentula* also do not apply to this species but indicate a larger one, 35-55μ long, without the indentations to the ventral margin. *E. perpusilla* is, therefore, the earliest legitimate name that definitely applies to this species.

var. **perminuta** (Grunow apud Van Huerck) *n. comb.*

Eunotia tridentula Ehrenb. var. *perminuta* Grunow apud Van Huerck, *l.c.*, figs. 29-30.

(Plate IX, figure 3)

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

37. **Eunotia praerupta** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 414 (1843).

var. **bidens** (Ehrenb.) Grunow ex Van Huerck, Syn. Diat. Belg., Pl. XXXIV, fig. 20 (Anvers 1881).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

var. **genuina** Grunow apud Van Huerck, *l.c.*, fig. 19.

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

38. **Eunotia pseudoparallela** A. Cleve-Euler in Comm. Biol. Soc. Sci. Fenn., IV, 14, p. 24 (1934).

(Plate IX, figure 2)

E. Arctic Occurrence.

4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

39. **Eunotia septentrionalis** Østrup in Medd. om Grønland, XV, p. 274, Pl. I, fig. 10 (1897).

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.

40. **Eunotia suecica** A. Cleve in Bih. kgl. Sv. Vet.-Akad. Handl., XXI, 3, 2, p. 29, Pl. I, figs. 31-2 (1895).

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25083.

41. **Eunotia tenella** (Grunow) Hustedt in Schmidt, Atlas der Diat., Pl. CCLXXXVII, figs. 20-25 (Leipzig 1913).

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

42. **Eunotia triodon** Ehrenberg, Die Infus., p. 192 (Leipzig 1838).

E. Arctic Occurrence.

4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

43. **Eunotia valida** Hustedt in Pascher, Süsswasser-Flora Mitteleuropas, X, ed. 2, p. 178, fig. 229 (1930).

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

44. **Eunotia veneris** (Kütz.) De Toni, Syll. Alg. II, p. 794 (Patavii 1892).

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

ACHNANTHACEAE

45. **Achnanthes flexella** (Bréb. ex Kütz.) Brun, Diat. des Alpes et du Jura, p. 29 (Genève 1880).

E. Arctic Occurrence.

1. ELLESMERE: *Egerton Valley,* Nares expedition (B) B.M. 24852; *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314, sub nom. *Achnanthidium flexellum*); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS; *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.

4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

46. **Achnanthes hyperborea** Grunow in Denkschr. kais. Akad. Wiss. Wien, XLVIII, 2, p. 102, Pl. I, figs. 4-5 (1884).

E. Arctic Occurrence.

(? Islands in Hudson, etc., Bays: *"Akpatok Island?",* Polunin 1931 *fide* Hendey (ex Polunin 1934, p. 201), who queries his own identification on which this record is based.)

47. **Achnanthes marginulata** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 21 (1880).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine* (Nares expedition cf. Cleve 1883a, p. 314, as *"Achnanthes marginata* Grunow"[1]).
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

48. **Achnanthes minutissima** Kützing in Linnaea, VIII, p. 578 (1833).

var. **cryptocephala** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXVII, figs. 41-4 (Anvers 1881).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51, 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

49. **Cocconeis placentula** Ehrenberg, Die Infus., p. 194 (Leipzig 1838).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.

50. **Cocconeis scutellum** Ehrenberg, Die Infus., p. 194 (Leipzig 1838).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.

51. **Cocconeis septentrionalis** Grunow in Denkschr. kais. Akad. Wiss. Wien, XLVIII, 2, p. 55, Pl. I, fig. 2 (1884).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Cornwallis Island* (Assistance Bay) (Grunow *l.c.*). This is the type locality.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.

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[1] There is no species of this name; evidently *A. marginulata* was meant.

NAVICULACEAE

52. **Navicula amphibola** Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 33 (1891).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.

53. **Navicula avenacea** de Brébisson ex Grunow apud Schneider, Naturw. Beitr. Kenntn. Kaukasusländer, p. 112, Pl. IV, fig. 23 (Dresden 1878).

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.

54. **Navicula bacilliformis** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 44, Pl. II, fig. 51 (1880).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

55. **Navicula bacillum** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Biol. 1838, p. 130 (1840) [1839].

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

56. **Navicula brachysira** de Brébisson ex Rabenhorst, Süssw. Diat. für Freunde der Mikrosk., p. 39, Pl. V, figs. 11c, d, e (Leipzig 1853).

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

57. **Navicula capitata** Ehrenberg, Die Infus., p. 185, Pl. XIII, fig. 20 (Leipzig 1838).

var. **capitata** (Ehrenb.) *n. comb.*

Navicula capitata Ehrenberg *l.c.*

Navicula hungarica Grunow var. *capitata* (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 16 (1895).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.

var. **hungarica** (Grunow) *n. comb.*

Navicula hungarica Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 539, Pl. III, fig. 30 (1860).

Navicula viridula (Kütz.) Ehrenberg var. *hungarica* (Grunow) H. & M. Peragallo, Diat. Mar. France, p. 95 (Paris 1897).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.

58. **Navicula cincta** (Ehrenb.) Ralfs apud Pritchard, Hist. Infus. ed. 4, p. 901 (London 1861).

var. **angusta** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 17 (1895).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

var. **heufleri** (Grunow) Van Huerck, Syn. Diat. Belg., p. 82 (Anvers 1885).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51, 67.

59. **Navicula cocconeiformis** Gregory in Quart. Jour. Microsc. Sci., IV, p. 6, Pl. I, fig. 22 (1856).

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

60. **Navicula contenta** Grunow ex Van Huerck, Syn. Diat. Belg., p. 109 (Anvers 1885).

var. **parallela** Petersen in Danske Bot. Arkiv, V, 9, p. 15 (1928).

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **typica** *n. var.*

Navicula contenta Grunow ex Van Huerck *l.c.*

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

61. **Navicula cryptocephala** Kützing, Die kies. Bacill., p. 95, Pl. III, figs. 20, 26 (Nordhausen 1844).

E. Arctic Occurrence.

1. ELLESMERE: *'Alert's' Winter Quarters*[1] (Nares expedition cf. Dickie 1878, p. 11); *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891 (cf. Dickie *l.c.*); *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.

62. **Navicula cuspidata** (Kütz.) Kützing, Die kies. Bacill., p. 94 (Nordhausen 1844).

var. **ambigua** (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 110 (1894).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition cf. Dickie 1878, p. 11, sub nom. *Navicula ambigua*).

63. **Navicula dicephala** Ehrenberg, Die Infus., p. 185 (Leipzig 1838).

E. Arctic Occurrence.

4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.

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[1] I.e., Floeberg Beach, 82° 27′ N. (N.P.)

64. **Navicula falaisiensis** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XIV, fig. 5 (Anvers 1880):

E. Arctic Occurrence.

(?Ellesmere: *"Cape Sabine?"* (Nares expedition cf. Cleve 1883a, p. 314). Cleve queries this record, being apparently uncertain of the identification.)

65. **Navicula heufleriana** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 130 (1894).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.24891.

66. **Navicula lanceolata** (Agardh) Kützing, Die kies. Bacill., p. 94 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M. 6077; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

67. **Navicula maculosa** Donkin, Nat. Hist. Brit. Diat., p. 25, Pl. V, fig. 1 (London 1871).

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

68. **Navicula minima** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XIV, fig. 15 (Anvers 1880).

"Navicula minutissima (Kützing) Grunow" Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 552 (1860) excl. syn.; non *Navicula minutissima* Rabenhorst (1853).

Although Grunow's description and figure of *Navicula minutissima* appear to belong to the present species, he founded the name on *Synedra minutissima* Kützing (1844, p. 63, Pl. III, fig. 30). However, from Kützing's description and figure it is impossible to ascertain what this was. The illustration consists of a short row of figures, the right-hand one of which is obviously a small *Navicula.* The others are completely indeterminable. Kützing's original gathering from "Francolino am Po Ufer" is preserved in the British Museum (Natural History). I have examined it and found his *Synedra minutissima* to be the same as *Navicula seminulum* Grunow var. *fragilarioides* Grunow apud Van Huerck.

var. **atomoides** (Grunow apud Van Huerck) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 128 (1894).

(Plate IX, figure 4)

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

var. **typica** *n. var.*

Navicula minima Grunow apud Van Huerck *l.c.*

(Plate IX, figure 5)

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

69. **Navicula minuscula** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XIV, figs. 2-4 (Anvers 1880).

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

70. **Navicula muralis** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XIV, figs. 26-28 (Anvers 1880).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour*, Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay*, Polunin Sept. 1936 (F,B) W 55.

71. **Navicula mutica** Kützing, Die kies. Bacill., p. 93, Pl. III, fig. 32 (Nordhausen 1844).

var. **nivalis** (Ehrenb.) Hustedt apud Sven Hedin, Southern Tibet VI, 3, p. 131 (Stockholm 1922).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour*, Nares expedition (B) B.M.24891.
4. C. Baffin: *Islands in Cape Hooper Harbour*, Anon. (B) B.M.1904.

72. **Navicula perpusilla** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 552, Pl. IV, fig. 7 (1860).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine* (Nares expedition ex Cleve 1883a, p. 314); *Craig Harbour*, Polunin Sept. 1936 (F,B) W 30.
7. N. Labrador: *Burwell*, Polunin July 1936 (F,B) W 61.

73. **Navicula pupula** Kützing, Die kies. Bacill., p. 93, Pl. XXX, fig. 40 (Nordhausen 1844).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour*, Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay*, Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Lake Harbour*, Polunin Aug. 1936 (F,B) W 16.

74. **Navicula pusilla** W. Smith, Syn. Brit. Diat. I, p. 52, Pl. XVII, fig. 145 (London 1853).

E. Arctic Occurrence.

4. C. Baffin: *Cumberland Sound*, Taylor 1861 (B) B.M.25083.

75. **Navicula pygmaea** Kützing, Spec. Alg., p. 77 (Lipsiae 1849).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley* (Nares expedition ex Dickie 1878, p. 11, sub nom. *Navicula minutula*).

76. **Navicula radiosa** Kützing, Die kies. Bacill., p. 91, Pl. IV, fig. 23 (Nordhausen 1844).

var. **genuina** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 526 (1860).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour*, Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour*, Polunin Sept. 1936 (F,B) W 51.
5. S. Baffin: *Lake Harbour*, Polunin July 1936 (F,B) W 118.
7. N. Labrador: *Burwell*, Polunin July 1936 (F,B) W 61, 129.

var. **tenella** (Bréb. ex Kütz.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 17 (1895).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

77. **Navicula ramosissima** (Agardh) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 26 (1895).

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.

78. **Navicula rhyncocephala** Kützing, Die kies. Bacill., p. 152, Pl. XXX, fig. 35 (Nordhausen 1844).

var. **brevis** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 529, Pl. IV, fig. 31c (1860).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.

var. **genuina** Schawo in Ber. Bot. Ver. Landshut, XIV, p. 35 (1896).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314).

79. **Navicula rotaeana** (Rabenh.) Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XIV, fig. 17 (Anvers 1880).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891; *Cape Sabine,* Nares expedition (B) B.M.29145; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

80. **Navicula salinarum** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 33 (1880).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.

81. **Navicula sphaerophora** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 419, Pl. III, 4, fig. 3 (1843).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

82. **Navicula styriaca** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XVII, figs. 7-8 (Anvers 1880).

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

83. **Navicula subtilissima** Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 37, Pl. II, fig. 15 (1891).

E. Arctic Occurrence.

8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

84. **Navicula tuscula** Ehrenberg in Ber. kgl. Akad. Wiss. Berlin 1840, p. 215 (1840).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.

85. **Navicula variabilis** *n. nom.*

Gomphonema ? vitreum Grunow apud Schneider, Naturwiss. Beitr. Kenntn. Kaukasusländer, p. 110 (Dresden, 1878).

Navicula gomphonemacea Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, fig. 13 (1880).

Navicula serians (Bréb.) Kützing var. *thermalis* Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, fig. 10 (1880).

"*Navicula exilis* Grunow (*Navicula exilis* Kütz. partim)" Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, figs. 11-2 (1880).

Anomoeoneis ? exilis (Kütz.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 8 (1895) excl. syn. Kützing.

?"*Navicula exilis* Kützing" Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 553 (1860).

? *Colletonema exile* Grunow *l.c.*, p. 571.

Cleve (1895, p. 8) was of the opinion that the three different forms included in the above synonymy are merely varieties of one species. With this I am in complete agreement. A new name has to be proposed for the species, as none of the epithets given above, viz., *vitreum, gomphonemacea,* or *exilis,* can be employed. The name *Navicula exilis* was first used by Kützing (1844, p. 95) for a form that it is impossible to interpret either from his description or his figure. From an examination of his original gathering from Nordhausen, which is preserved in the British Museum (Natural History), his plant is seen to be a small form of *Navicula cryptocephala.* Grunow seems always to have been doubtful as to the correct application of Kützing's name, for in the same paper in which he published as "*Navicula exilis* Kg." (1860, p. 553) a description of what is probably the present form, he also published a *Navicula cryptocephala* var. *minor* (p. 527) with the synonym "*Navicula exilis* Kg.?". Again, in Van Huerck's Synopsis (Van Huerck 1880-5, Pl. VIII, fig. 2), Grunow figures a "*Navicula cryptocephala* var. *exilis* Grun. (*Navicula exilis* Kg. partim)" as well as this species (Pl. XII, figs. 10-11), under the name "*Navicula exilis* Grun. (*Navicula exilis* Kütz. partim)". In both cases the form placed under *Navicula cryptocephala* is the true *Navicula exilis* Kützing.

As it was then unoccupied, Grunow should have used the combination *Navicula vitrea* when he transferred *Gomphonema ? vitreum* to *Navicula* (Van Huerck 1880-5, Pl. XII, fig. 13), instead of using the new epithet *gomphonemacea,* which is, therefore, illegitimate. The combination *Navicula vitrea* cannot now be made as it would be antedated by *Navicula vitrea* (Cleve) Cleve (1894, p. 111), which already has one later homonym *Navicula vitrea* (Østrup) Hustedt (1930, p. 289). It would, therefore, have been possible to take *Navicula gomphonemacea,* dating from the present, were it not that this name has already been used (Héribaud 1920, p. 20). It is accordingly necessary to propose a new name for this species, and to make new combinations for its varieties.

var. **capitata** *n. var.*

"Navicula exilis" Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, figs. 11-12 (Anvers 1880), excl. syn. Kützing.

(Plate IX, figure 6)

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

var. **gomphonemacea** (Grunow apud Van Huerck) *n. comb.*

Gomphonema ? vitreum Grunow apud Schneider *l.c.*

Navicula gomphonemacea Grunow apud Van Huerck *l.c.*

Anomoeoneis ? exilis var. *gomphonemacea* (Grunow) Cleve *l.c.*

(Plate IX, figure 7)

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

86. **Navicula viridula** (Kütz.) Ehrenberg, Die Infus., p. 183 (Leipzig 1838), excl. descr. et fig.

Ehrenberg (*l.c.*) based this combination on *Frustulia viridula* Kützing (1833, p. 551), which is the present form; but his accompanying description and figure belong instead to *Pinnularia viridis* (Nitzsch) W. Smith.

var. **genuina** Mayer in Ber. Naturwiss. Ver. Regensburg, XIV, p. 158 (1913).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.

var. **slesvicensis** (Grunow) Van Huerck, Syn. Diat. Belg., p. 84 (Anvers 1885).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314, sub nom. *Navicula viridula*).
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.

87. **Navicula vulpina** Kützing, Die kies. Bacill., p. 92, Pl. III, fig. 43 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

88. **Navicula zellensis** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 521 (1860).

var. **linearis** (Østrup) *n. comb.*

Anomoeoneis zellensis (Grunow) Cleve var. *linearis* Østrup in Medd. om Grønland, XLIII, p. 239, Pl. XIV, fig. 6 (1910).

(Plate IX, figure 8)

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

var. **typica** *n. var.*

Navicula zellensis Grunow *l.c.*

(Plate IX, figure 9)

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

89. **Pinnularia abaujensis** (Pantocsek) *n. comb.*

Navicula abaujensis Pantocsek, Beitr. Kenntn. Foss. Bacill. Ungarns II, p. 41, Pl. III, fig. 54 (Nagy-Tapolcsány 1889).

Stauroptera parva Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 423, Pl. III, 1, fig. 19 (1843).

Stauroneis parva (Ehrenb.) Kützing, Die kies. Bacill., p. 106 (Nordhausen 1844).

Pinnularia interrupta W. Smith, Syn. Brit. Diat. I, p. 59 (London 1853), excl. descr. and fig.

Navicula stauroptera Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 516 (1860).

Navicula gibba (Ehrenb.) Kützing f. *curta* Bleisch apud Rabenhorst, Alg. Sachs. Resp. Mitteleur. No. 951 (Dresden 1860).

Navicula parva (Ehrenb.) Ralfs apud Pritchard, Hist. Infus. ed. 4, p. 897 (London 1861), excl. descr. and syn. W. Smith.

Pinnularia stauroptera (Grunow) Rabenhorst, Flor. Eur. Alg. I, p. 222 (Lipsiae 1864).

"*Navicula gibba* (Ehrenb.) Kützing" Donkin, Nat. Hist. Brit. Diat., p. 70, Pl. XII, fig. 3 (London 1873).

"*Navicula tabellaria* (Ehrenb.) Kützing" Schmidt, Atlas der Diat., Pl. XLV, figs. 48-50 (Leipzig 1876).

Navicula gibba var. *hyalina* M. Peragallo & Héribaud apud Héribaud, Diat. d'Auvergne, p. 92, Pl. IV, fig. 14 (Clermont-Ferrand 1893).

(Plate X, figure 1)

This species has frequently been confused with *Pinnularia parvula*, probably owing to the fact that the epithet first applied to both was *parva*, which cannot stand in either case. For the present form the combination *Pinnularia parva* would be preoccupied by *Pinnularia parva* Gregory ex Cleve.[1] The epithet *interrupta*, again, cannot be used because Smith based his species on *Stauroneis parva* (Ehrenb.) Kützing and the combination *Pinnularia parva* was not then occupied. This renders Smith's name illegitimate. *Navicula stauroptera* is an invalid name for the same reason, *Navicula parva* not having been used for any form in 1860 when Grunow coined the name, basing it on *Stauroptera parva* Ehrenberg. The earliest available epithet is, therefore, *abaujensis*, and I have, accordingly, made the requisite combination.[2]

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077.
3. N. Baffin: *Arctic Bay*, Polunin Sept. 1936 (F,B) W 55.

90. **Pinnularia appendiculata** (Agardh) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 75 (1895).

E. Arctic Occurrence.

4. C. Baffin: *Islands in Cape Hooper Harbour*, Anon. (B) B.M.1904.

91. **Pinnularia biceps** Gregory in Quart. Jour. Microsc. Sci., IV, p. 8, Pl. I, fig. 28 (1856).

Pinnularia interrupta W. Smith, Syn. Brit. Diat. I, p. 59 (London 1853), excl. syn.

This species has always been known by Smith's name, which, however, cannot stand because below his short description is the synonym "*Stauroneis parva*, Kütz. Bacill. xxix. 23 Sp. Alg. p. 92. specim. misit cl. De Brébisson". As the combination *Pinnularia parva* was at that time unoccupied, Smith should have used it, and his failure to do so renders his name invalid. Also, as his species was founded on *Stauroneis parva* (Ehrenb.) Kützing, Smith's name could apply only to that form and not to the form that he described, which is the one under consideration. For this reason Gregory's name must be taken up.

f. **biceps** (Cleve) *n. comb.*

Pinnularia interrupta f. *biceps* Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 76 (1895).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay*, Polunin Sept. 1936 (F,B) W 14.
4. C. Baffin: *Islands in Cape Hooper Harbour*, Anon. (B) B.M.1904.
8. N. Quebec: *Wolstenholme*, Polunin Aug. 1936 (F,B) W 52.

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[1] This is *Pinnularia parvula* (Ralfs apud Pritchard) A. Cleve-Euler (*q.v.*).

[2] Since writing this I have come to the conclusion that this form and *Pinnularia parvula* (*q.v.*) are properly to be regarded as conspecific with *Pinnularia gibba* Ehrenberg, although all three are probably varietally distinct. (R.R., September 1946.)

f. **petersenii** *n. nom.*

Pinnularia interrupta f. *minor* Petersen apud Rosenvinge & Warming, The Botany of Iceland II, p. 405, fig. 25 (Copenhagen 1928); NON *Pinnularia interrupta* f. *minor* O. Müller (1898).

(Plate IX, figure 11)

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

f. **stauroneiformis** (Cleve) *n. comb.*

Pinnularia interrupta f. *stauroneiformis* Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 76 (1895).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

92. **Pinnularia borealis** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 420, Pl. I, 2, fig. 6, Pl. IV, 1, fig. 5, 5, fig. 4 (1843).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition ex Dickie 1878, p. 11, sub nom. *Navicula borealis*).
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

93. **Pinnularia brandelii** Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 26, Pl. I, figs. 8-9 (1891).

(Plate IX, figure 10)

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

94. **Pinnularia brebissonii** (Kütz.) Rabenhorst, Flor. Eur. Alg. I, p. 222 (Lipsiae 1864).

var. **diminuta** (Grunow apud Van Huerck) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 78 (1895).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.

var. **genuina** O. Müller ex Meister, Beitr. Krypt.-Flora Schweiz, IV, 1, p. 160 (Bern 1912).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25083.

95. **Pinnularia brevistriata** (Grunow apud Van Huerck) Mills, Index Gen. Spec. Diat., p. 1274 (London 1934).

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.

96. **Pinnularia cleveana** *n. nom.*

"Pinnularia undulata Gregory" Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 30, Pl. II, fig. 8, 1891 (*non* Gregory).

(Plate IX, figure 12)

Gregory's description and figure (1854, p. 97) show that his form was certainly not that which is usually called *Pinnularia undulata;* it was probably *Pinnularia polyonca* (de Brébisson ex Kützing) W. Smith.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

97. **Pinnularia cuneata** (Østrup) A. Cleve-Euler in Ark. f. Bot., XIV, 9, p. 31 (1915), *non* Meister (1932).

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

98. **Pinnularia divergens** W. Smith, Syn. Brit. Diat. I, p. 57, Pl. XVIII, fig. 177 (London 1853).

var. **elliptica** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 79 (1895).

E. Arctic Occurrence.

4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M. 25020.

var. **genuina** Mayer in Ber. Naturwiss. Ver. Regensburg, XIV, p. 191 (1913).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

var. **sublinearis** Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 79 (1895).

E. Arctic Occurrence.

4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

99. **Pinnularia divergentissima** (Grunow apud Van Huerck) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 77 (1895).

var. **hustedtiana** *n. nom.*

Pinnularia divergentissima (Grunow) Cleve var. *capitata* Hustedt apud Sven Hedin, Southern Tibet VI, 3, p. 128 (Stockholm 1922); non Fontell (1917).

(Plate IX, figure 14)

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25020.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **typica** n. var.[1]

Navicula divergentissima Grunow apud Van Huerck, Syn. Diat. Belg., Pl. VI, fig. 32 (Anvers 1880).

Pinnularia divergentissima (Grunow apud Van Huerck) Cleve *l.c.*

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.

100. **Pinnularia fasciata** (Lagerstedt) Mereschowsky apud Kozlow, Mongolia and Kam. VIII, p. 10 (St. Petersburg 1906).[2]

var. **inconstantissima** (Grunow) *n. comb.*

Navicula bacillaris Gregory var. *inconstantissima* Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, fig. 28 (Anvers 1880).

This is the earliest varietal epithet applied to the type form of the species and must, therefore, be adopted.

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25083.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **inflata** (Pantocsek) *n. comb.*

Navicula fasciata Lagerstedt var. *inflata* Pantocsek in Verh. Ver. Natur.- u. Heilk. Pozsony, n.s. XXII, p. 22, Pl. II, fig. 63 (1912).

(Plate X, figure 2)

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

101. **Pinnularia globiceps** Gregory in Quart. Jour. Microsc. Sci., IV, p. 10, Pl. I, fig. 34 (1856).

var. **krookii** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 77 (1895).

(Plate X, figure 3)

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **typica** *n. var.*

Pinnularia globiceps Gregory *l.c.*

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition ex Dickie 1878, p. 11, sub nom. *Navicula globiceps*).

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[1] Cf. p. 181, and footnote on p. 187 (N.P.)
[2] Title and place of publication translated from the Russian.

102. **Pinnularia gracillima** Gregory in Quart. Jour. Microsc. Sci., IV, p. 9, Pl. I, fig. 31 (1856).

(Plate IX, figure 13)

This species has been misinterpreted by most authors, the mistake apparently dating from Van Huerck's figure (1880-5, Pl. VI, fig. 24). This shows a form about 30μ long, with rostrate (not capitate) apices, and parallel striæ numbering about 20 in 10μ. However, from his figure and from authentic specimens in the British Museum (Natural History), Gregory's form is seen to be 35-60μ long, capitate and with 12 striæ in 10μ. All later authors have followed Van Huerck, but the form to which they refer is probably a variety of *Pinnularia cleveana* Ross (*q.v.*).

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.

103. **Pinnularia hudsonensis** *n. sp.*

(Plate X, figure 4)

Valvis linearibus, 50-65μ x 8-9μ, apices capitatos rotundatos versus paullatim contractis; costis 12-13 in 10μ, mediis valde radiantibus, terminalibus convergentibus; rhaphe subflexuosa, foraminibus centralibus approximatis, fissis terminalibus fere rectis; area angusta, media in valva usque ad latera dilatata, fasciam transapicalem latiorem efficiente, ab utroque latere noduli centralis serie uno punctorum indistinctorum ornatam. Habitat in aqua dulce, Sugluk, Prov. Quebec, Canada. Typus in Herb. Farlow, cotypus in Herb. Mus. Brit.

The character that distinguishes this species from all other members of its section (*Tabellariae*) is the row of indistinct punctæ on either side of the central nodule.

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

104. **Pinnularia intermedia** (Lagerstedt) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 80 (1895).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.

105. **Pinnularia lata** (Bréb.) W. Smith, Syn. Brit. Diat., I, p. 55 (London 1853).

var. **genuina** Mayer in Denkschr. Bay. Bot. Ges. Regensburg, XIII (n.s. VII), p. 40 (1917).

E. Arctic Occurrence.

4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

var. **minor** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 81 (1895).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

106. **Pinnularia leptosoma** (Grunow apud Van Huerck) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 74 (1895).

var. **typica** *n. var.*

Navicula leptosoma Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XII, fig. 29 (Anvers 1880).

Pinnularia leptosoma (Grunow apud Van Huerck) Cleve *l.c.*

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.

var. **undulata** Østrup apud Rosenvinge & Warming, The Botany of Iceland II, 1, p. 30 (Copenhagen 1918).

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.

107. **Pinnularia major** (Kütz.) W. Smith, Syn. Brit. Diat. I, p. 54 (London 1853).

var. **subacuta** (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 89 (1895).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

108. **Pinnularia mesogongyla** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1841, p. 421 (1843).

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

109. **Pinnularia mesolepta** (Ehrenb.) W. Smith, Syn. Brit. Diat. I, p. 58 (London 1853).

var. **genuina** (Grunow) Meister, Beitr. Krypt.-Flora Schweiz, IV, 1, p. 162 (Bern 1912).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition cf. Dickie 1878, p. 11, sub nom. *Navicula mesolepta*).

var. **stauroneiformis** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 76 (1895).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

110. **Pinnularia microstauron** (Ehrenb.) Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 28 (1891).

(Plate X, figure 5)

From Ehrenberg's figures accompanying the original description of his *Stauroptera microstauron* (Ehrenberg 1843, p. 423, Pl. I, 4, fig. 1, and Pl. IV, 2, fig. 2) it can be seen that this is a linear form about 70μ long, with rostrate to capitate apices. The striæ are only slightly radiate, and are interrupted for a short distance in the centre. The axial area is not very broad. Cleve (1895, p. 77) included in the synonymy of this species *Navicula divergens* (W. Smith) Ralfs apud Pritchard f. *minor* A. Schmidt (Atlas der Diat., Pl. 44, fig. 14), the unnamed figure (No. 34 on the same plate of Schmidt), and *Navicula divergens* var. *prolongata* Brun & M. Peragallo apud Héribaud (1893, p. 89). All of these have the striæ strongly radiate at the centre and convergent at the apices instead of only slightly so. Cleve (*l.c.*) also described the striæ as strongly radiate, which was an error, as this character, like the above forms, does not belong to the present species.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

111. **Pinnularia parvula** (Ralfs apud Pritchard) A. Cleve-Euler in Sver. Geol. Und. ser. C, No. 309, p. 72 (1922); *non* Hustedt (1937) (nomen nudum).

Pinnularia parva Gregory in Quart. Jour. Microsc. Sci., II, p. 98, Pl. IV, fig. 11 (1854) (nomen provisiorium).

Navicula parvula Ralfs apud Pritchard, Hist. Infus. ed. 4, p. 908 (London 1861).

Navicula biglobosa Schuman in Schr. Phys. Oek. Ges. Königsberg VIII, p. 57, Pl. II, fig. 48 (1867).

Pinnularia parva Gregory ex Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 87 (1895), excl. syn. *Stauroptera parva* Ehrenberg, *Navicula gibba* (Ehrenb.) Kütz. var. *brevistriata* Van Huerck, *Navicula gibba* (Ehrenb.) Kützing f. *curta* Bleisch, *Navicula curtestriata* Pantocsek, *Navicula* (*peregrina* var.?) *curtestriata* Pantocsek.

(Plate X, figure 6)

I have given an extended synonymy of this species because it has been much confused with *Pinnularia abaujensis* (Pantocsek) Ross (*q.v.*)[1]

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

112. **Pinnularia pulchra** Østrup in Medd. om Grønland, XV, p. 269, Pl. I, fig. 3 (1897).

(Plate X, figure 7)

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

113. **Pinnularia spitsbergensis** Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 82, Pl. I, fig. 13 (1895).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.

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[1] *See also* footnote (²) on p. 200.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

114. **Pinnularia streptoraphe** Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 23 (1891).

E. Arctic Occurrence.

4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25083.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

115. **Pinnularia subcapitata** Gregory in Quart. Jour. Microsc. Sci., IV, p. 9, Pl. I, fig. 30 (1856).

var. **stauroneiformis** (Van Huerck) Mayer in Denkschr. Bay. Bot. Ges. Regensburg, XIII[1] (n.s. VII), p. 35, Pl. III, fig. 26 (1917).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.

116. **Pinnularia sublinearis** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVII, 3, p. 74 (1895).

E. Arctic Occurrence.

8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

117. **Pinnularia subsolea** A. Cleve-Euler in Comm. Biol. Soc. Sci. Fenn., IV, 14, p. 47, Pl. III, fig. 66 (1934).

(Plate X, figure 8)

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M. 25020.

118. **Pinnularia viridis** (Nitzsch) W. Smith, Syn. Brit. Diat. I, p. 54 (London 1853).

var. **clevei** Meister, Beitr. Krypt.-Flora Schweiz, IV, 1, p. 150 (Bern 1912).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

var. **commutata** (Grunow) Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 22 (1891).

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M. 25083.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.

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[1] Mills (Index Gen. Spec. Diat., p. 1306) states that this combination is made here but gives no page number. I have not been able to consult the original publication—R.R., September 1946. (Other details have been filled in through the kind offices of Dr. R. Patrick of the Academy of Natural Sciences of Philadelphia.—N.P., November 1946.)

var. **intermedia** Cleve *l.c.*

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.

119. **Caloneis bacillaris** (Gregory) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 50 (1894).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

120. **Caloneis islandica** Østrup apud Rosenvinge & Warming, The Botany of Iceland, II, 1, p. 6, Pl. I, fig. 2 (Copenhagen 1918).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

121. **Caloneis obtusa** (W. Smith) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 54 (1894).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

122. **Caloneis silicula** (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 51 (1894).

var. **alpina** Cleve *l.c.*

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.24891.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin July 1936 (F,B) W 118; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **genuina** Cleve *l.c.*

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

var. **subundulata** (Grunow apud Cleve & Grunow) *n. comb.*

Navicula ventricosa Ehrenberg var. *subundulata* Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 29, Pl. I, fig. 16 (1880).

Caloneis silicula (Ehrenb.) Cleve var. *ventricosa* Cleve *l.c.*, p. 52.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.

123. **Neidium affine** (Ehrenb.) Pfitzer in Hanstein's Bot. Abhandl. I, 2, p. 39 (Bonn 1871).

var. **capitatum** Mölder *n. var.*

Neidium affine var. *capitata* Mölder in Ann. Bot. Soc. Zool.-Bot. Fenn. Vanamo, VIII, 7, p. 30 (1937) nomen nudum.

(Plate X, figure 9)

Valvis fere linearibus, lateribus subconvexis, in apices latos capitatos contractis, 80-90μ longis, 18-22μ latis.

As Mölder (*l.c.*) did not provide a Latin diagnosis for this variety it was not validly published. I have here supplied the deficiency.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

var. **undulatum** (Grunow) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 68 (1894).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

124. **Neidium amphigomphus** (Ehrenb.) Pfitzer in Hanstein's Bot. Abhandl. I, 2, p. 39 (Bonn 1871).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

125. **Neidium bisulcatum** (Lagerstedt) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 68 (1894).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M. 25020.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

126. **Neidium incurvum** (Gregory) Østrup apud Rosenvinge & Warming, The Botany of Iceland II, 1, p. 8 (Copenhagen 1918).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

127. **Neidium iridis** (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 69 (1894).

var. **ampliatum** (Ehrenb.) Cleve *l.c.*

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **majus** (Grunow) *n. comb.*

Navicula firma Kützing var. *major* Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 543, Pl. V, fig. 1 (1860).

Navicula iridis Ehrenberg (1843).

Neidium iridis (Ehrenb.) Cleve *l.c.* excl. var. *ampliatum.*

This being the earliest varietal epithet applied to the type form of the species, I have had to adopt it.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
4. C. BAFFIN: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

128. **Neidium kozlowi** Mereschowsky apud Kozlow, Mongolia and Kam. VIII, p. 16 (St. Petersburg 1906).[1]

var. **parvum** Mereschowsky apud Kozlow *l.c.*

(Plate XI, figure 1)

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

var. **typicum** *n. var.*

Neidium kozlowi Mereschowsky apud Kozlow *l.c.*

(Plate XI, figure 2)

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

129. **Neidium longiceps** (Gregory) *n. comb.*

Navicula longiceps Gregory in Quart. Jour. Microsc. Sci., IV, p. 8, Pl. I, fig. 27 (1856).

Neidium affine (Ehrenb.) Pfitzer var. *longiceps* (Gregory) Cleve

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

130. **Stauroneis anceps** Ehrenberg in Phys. Abhandl. klg. Akad. Wiss. Berl. 1841, p. 422, Pl. II, 1, fig. 18 (1843).

var. **amphicephala** (Kütz.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 148 (1894).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor (1861) (B) B.M. 25020.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

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[1] Title and place of publication translated from the Russian. (N.P.)

var. **hyalina** M. Peragallo & Brun apud Héribaud, Diat. d'Auvergne p. 78, Pl. III, fig. 19 (Clermont-Ferrand 1893).

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

var. **linearis** (Ehrenb.) Grunow apud Van Huerck, Syn. Diat. Belg. Pl. IV, fig. 8 (Anvers 1880).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852 (cf. Dickie 1878, p. 11, sub nom. *Stauroneis anceps*).
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

var. **siberica** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 48 (1880).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

131. **Stauroneis obtusa** Lagerstedt in Bih. kgl. Sv. Vet.-Akad. Handl., I, 14, p. 36, Pl. I, fig. 11 (1873).

E. Arctic Occurrence.

8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

132. **Stauroneis perpusilla** Grunow in Denkschr. kais. Akad. Wiss. Wien, XLVIII, 2, p. 105, Pl. I, fig. 50 (1884).

var. **obtusiuscula** Grunow *l.c.* Pl. I, fig. 49.
(Plate XI, figure 3)

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

133. **Stauroneis phoenicenteron** (Nitzsch) Kützing, Die kies. Bacill., p. 104 (Nordhausen 1844).

var. **amphilepta** (Ehrenb.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 149 (1894).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

var. **genuina** Cleve *l.c.*

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

134. **Stauroneis smithii** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, X, p. 564 (1860).

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.

135. **Diploneis oblongella** (Naegeli ex Kützing) Cleve in Act. Soc. Faun. Flor. Fenn., VIII, 2, p. 44 (1891).

Navicula oblongella Naegeli ex Kützing (1849).

Pinnularia ovalis Hilse apud Rabenhorst (1861).

Diploneis ovalis (Hilse apud Rabenhorst) Cleve *l.c.*

The two forms included in the above synonymy are usually regarded as only varietally distinct, and are normally placed under *Diploneis ovalis* (Hilse apud Rabenhorst) Cleve. However, the other epithet, *oblongella,* being earlier, is the one that should be used according to the rules.

var. **oblongella** (Naegeli ex Kützing) *n. comb.*

Navicula oblongella Naegeli ex Kützing, Spec. Alg., p. 890 (Lipsiae 1849).

Diploneis ovalis var. *oblongella* (Naegeli ex Kützing) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 93 (1894).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **ovalis** (Hilse) *n. comb.*

Pinnularia ovalis Hilse apud Rabenhorst, Alg. Eur., No. 1025 (Dresden 1861).

Navicula elliptica Kützing var. *ovalis* (Hilse) Van Huerck, Treat. Diat. trans. Baxter, p. 201 (London 1896).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

136. **Diploneis pseudovalis** Hustedt in Pascher, Süsswasser-Flora Mitteleur. X, ed. 2, p. 253, fig. 403 (Jena 1930).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

137. **Frustulia rhomboides** (Ehrenb.) De Toni, Syll. Alg. II, p. 277 (Patavii 1891).

var. **crassinervia** (Bréb. ex W. Smith) *n. comb.*

Navicula crassinervia de Brébisson ex W. Smith, Syn. Brit. Diat. I, p. 47 (London 1853).

Vanhuerckia rhomboides (Ehrenb.) de Brébisson var. *crassinervia* (Bréb. ex W. Smith) Van Huerck, Syn. Diat. Belg., p. 112 (Anvers 1885).

Frustulia saxonica Rabenhorst, Bacill. Sachs., No. 42 (Dresden 1851).

Frustulia rhomboides (Ehrenb.) De Toni var. *saxonica* (Rabenhorst) De Toni *l.c.*

E. Arctic Occurrence.

4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148; *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904; *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

138. **Frustulia vulgaris** (Thwaites) De Toni, Syll. Alg. II, p. 280 (Patavii 1891).

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.

139. **Diatomella balfouriana** Greville in Ann. Mag. Nat. Hist. ser. II, XV, p. 259, Pl. IX, figs. 10-13 (1855).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.

140. **Gomphonema angustatum** (Kütz.) Rabenhorst, Flora Eur. Alg. I, p. 283 (Lipsiae 1864).

var. **aequale** (Gregory) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 181 (1894).

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

var. **productum** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXIV, figs. 52-55 (Anvers 1880).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891; *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314, sub nom. *Gomphonema augustatum*).
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

var. **undulatum** Grunow ex Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 181 (1894).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

141. **Gomphonema intricatum** Kützing, Die kies. Bacill., p. 87, Pl. IX, fig. 4 (Nordhausen 1844).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

142. **Gomphonema micropus** Kützing, Die kies. Bacill., p. 84, Pl. VIII, fig. 12 (Nordhausen 1844).

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 129.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

143. **Gomphonema mustela** Ehrenberg, Mikrogeol. Pl. XVII, 2, fig. 37 (Leipzig 1854).

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

144. **Gomphonema parvulum** Kützing, Spec. Alg., p. 65 (Lipsiae 1849).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.

145. **Gomphonema subclavatum** (Grun. apud Schneid.) Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XXIII, figs. 38-41 (Anvers 1880).

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

146. **Gomphonema truncatum** Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1831, p. 88 (1832).

Gomphonema ? constrictum Ehrenberg in Phys. Abhandl. kgl. Akad. Wiss. Berl. 1830, p. 63 (1832) [1830] nomen nudum.

Gomphonema constrictum Ehrenberg ex Kützing, Die kies. Bacill., p. 86 (Nordhausen 1844).

This species is usually known as *Gomphonema constrictum* Ehrenberg. It was first published by Ehrenberg (*l.c.*) as a *nomen nudum* and when he later provided a description of the form he called it *Gomphonema truncatum* and gave *Gomphonema ? constrictum* as a synonym. The name that I have used is, therefore, the first validly published name for the species.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

147. **Cymbella aequalis** W. Smith ex Greville in Ann. Mag. Nat. Hist. ser. II, XV, p. 255, Pl. IX, fig. 4 (1855), non *"Cymbella aequalis* W. Smith" Cleve (1894) *et auct.*

(Plate XI, figure 4)

Cleve (1894, p. 170) gave a very inaccurate description of this species. He was apparently misled by Smith's description (1856, p. 84) "Valve nearly direct and symmetrical, slightly curved at the produced and obtuse extremities; striæ 30 in ·001″. Length ·0013″ to ·0015″. Breadth of V. ·0003″ " and, as a result, considered it identical with *Cymbella obtusa* Gregory and *Cymbella subaequalis* Grunow, the latter of which his description fits. Cleve had apparently not seen the original description and figure of the species, as he gives no reference to it; nor had he seen any authentic specimens. I have examined the slide from Braemar labelled "*Cymbella aequalis* n. sp." by W. Smith. This shows that *Cymbella aequalis* has the following characteristics:

Valve almost symmetrical, lanceolate, with narrow produced apices slightly bent towards the ventral side. Length 30-55μ, breadth 7-10μ. Striæ slightly radiate throughout, about 13 in 10μ. Raphe almost straight, terminal fissures semicircular.

I have also examined authentic material of *Cymbella obtusa* Gregory, which appears to be identical with *Cymbella delicatula* Kützing and certainly agrees neither with *Cymbella aequalis* W. Smith nor with *Cymbella subaequalis* Grunow.

Cymbella aequalis is closely related to *Cymbella angustata* and *C. scotica*. From the former it differs in being gradually and not abruptly narrowed into the apices, in not being centrally gibbous, and in having slightly coarser striæ; from the latter it differs in the apices, which are narrow and bent ventrally instead of being wider and reflexed, and again in the slightly coarser striæ and absence of any central gibbosity.

E. Arctic Occurrence.

2. DEVON ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. BAFFIN: *Clyde River,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.

148. **Cymbella amphicephala** Naegeli ex Kützing, Spec. Alg., p. 890 (Lipsiae 1849).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

149. **Cymbella angustata** (W. Smith) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 161 (1894).

var. **hybrida** (Grunow ex A. Schmidt) ***n. comb.***

Cymbella aequalis W. Smith var. *hybrida* Grunow ex A. Schmidt, Atlas der Diat., Pl. LXXI, fig. 50 (1881).

Navicula angustata W. Smith (1853).

Cymbella angustata (W. Smith) Cleve *l.c.*

(Plate XI, figure 5)

Although this varietal epithet is singularly inappropriate for the type variety of a species, the rule of priority prevents the choice of another.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Sugluk,* Polunin July (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **linearis** (Fontell) *n. comb.*

Cymbella incerta (Grunow apud Cleve and Möller) Cleve var. *linearis* Fontell in Ark. f. Bot., XIV, 21, p. 23, Pl. II, fig. 39 (1917).

(Plate XI, figure 6)

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25083.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

150. **Cymbella austriaca** Grunow ex A. Schmidt, Atlas der Diat., Pl. IX, fig. 10 (Leipzig 1875).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

151. **Cymbella botellus** (Lagerstedt) A. Schmidt, Atlas der Diat., Pl. LXXI, fig. 39 (Leipzig 1881).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077; *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51, 67.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

152. **Cymbella cesatii** Grunow ex A. Schmidt, Atlas der Diat., Pl. LXXI, figs. 48-9 (Leipzig 1881).

Navicula cesatii Rabenhorst (1853).

As there is no mention of Rabenhorst's species in the Atlas (*l.c.*), one must regard *Cymbella cesatii* as an entirely new name, although it was probably intended to be based on *Navicula cesatii.* The two names are at any rate synonymous.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

153. **Cymbella cistula** (Hemprich & Ehrenb.) Kirchner apud Cohn, Krypt. Flor. Schlesien II, 1, p. 189 (Breslau 1878).

var. **arctica** (Lagerstedt) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 173 (1894).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
9. Islands in Hudson, etc., Bays: *Akpatok Island,* Polunin 1931 *fide* Hendey (ex Polunin 1934, p. 201, sub nom *Cymbella arctica*).

var. **eucistula** Mayer in Ber. Naturw. Ver. Regensburg, XIV, p. 256 (1913).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **maculata** (Kütz.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 173 (1894).

"Cocconema parvum W. Smith" A. Schmidt, Atlas der Diat., Pl. X, fig. 14-15 (Leipzig 1875).

"Cymbella parva (W. Smith) Cleve" Cleve *l.c.*, p. 172, excl. syn. W. Smith.

There appears to be no distinction other than size between *Cymbella cistula* var. *maculata* and the form usually known as *Cymbella parva,* and as there is a continuous gradation in this character it cannot be considered of any importance. I have, therefore, included both forms under this heading.

An examination of the type material of *Cocconema parvum* W. Smith showed that it has been misinterpreted by later authors and does not belong here. Its characters are as follows:

Valve narrow, 30-40μ long, 8-10μ broad, ventral margin slightly convex, not centrally gibbous, dorsal margin arcuate; apices sub-rostrate; raphe only slightly arcuate; striæ 12 in 10μ. It is synonymous with *Cymbella affinis* Kützing.

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891 (cf. Dickie 1878, p. 11, sub nom. *Cymbella maculata*).[1]
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
9. Islands in Hudson, etc., Bays: *Akpatok Island,* Polunin 1931 *fide* Hendey (ex Polunin 1934, p. 201) as above and also as *"Cymbella cymbiformis* var. *parva"*.

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[1] Dickie's (*l.c.*), report of *Cymbella maculata* from Egerton Valley refers to *C. turgida* (*q.v.*).

154. **Cymbella cuspidata** Kützing, Die kies. Bacill., p. 79, Pl. III, fig. 40 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852; *Discovery Harbour,* Nares expedition (B) B.M.24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

155. **Cymbella gastroides** (Kütz.) Kützing, Die kies. Bacill., p. 79 (Nordhausen 1844).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

156. **Cymbella heteropleura** (Ehrenb.) Kützing, Die kies. Bacill., p. 79, (Nordhausen 1844).

var. **minor** Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 167 (1894).

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109.

var. **typica** *n. var.*

Cymbella heteropleura (Ehrenb.) Kützing *l.c.*

E. Arctic Occurrence.

4. C. Baffin: *Cumberland Sound,* Taylor 1861 (B) B.M.25020, 25083.

157. **Cymbella microcephala** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. VIII, figs. 36-9 (Anvers 1880).

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

158. **Cymbella rabenhorstii** *n. nom.*

Cymbella gracilis (Rabenh.) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 169 (1894); *non* (Ehrenb.) Kützing (1844).

E. Arctic Occurrence.

4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.

159. **Cymbella rupicola** Grunow ex A. Schmidt, Atlas der Diat., Pl. LXXI, figs. 70-71 (Leipzig 1881).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine* (Nares expedition ex Cleve 1883a, p. 314).

160. **Cymbella scotica** W. Smith, Syn. Brit. Diat. I, p. 18, Pl. II, fig. 25 (London 1853).

Cymbella pisciculus Gregory var. *incerta* Grunow apud Cleve & Möller, Diat. No. 96 (Upsala 1878).

Cymbella incerta (Grunow apud Cleve & Möller) Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 170 (1894).

Cymbella scotica was referred by Van Huerck (1880-5, Pl. III, fig. 21) to *Encyonema gracile* Rabenhorst. Cleve (1894, p. 169) followed him and cited *Cymbella scotica* as a synonym under *Cymbella gracilis* (Rabenh.) Cleve = *C. rabenhorstii* Ross. From an examination of the type material (B.M.23110 "Pass of Killiecrankie. Mr. P. Grant") I find that this is an error, and that *C. scotica* agrees instead with *Cymbella incerta*, the original gathering of which (Cleve & Möller's Diatoms No. 96) I have also examined.

This species is closely related to *Cymbella angustata* and *C. aequalis*.

var. **incerta** (Grunow apud Cleve & Möller) *n. comb.*[1]

Cymbella pisciculus var. *incerta* Grunow apud Cleve & Möller *l.c.*

(Plate XI, figures 7, 8)

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour.* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **naviculacea** (Grunow ex Cleve) *n. comb.*

Cymbella (*pisciculus* var.) *naviculacea* Grunow ex Cleve in Ofvers. Kgl. Sv. Vet.-Akad. Förhandl. 1881, 10, p. 13 (1881).

(Plate XI, figure 9)

E. Arctic Occurrence.

4. C. BAFFIN: *Cumberland Sound,* Taylor 1861 (B) B.M.25020.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 129.

161. **Cymbella stauroneiformis** Lagerstedt in Bih. Kgl. Sv. Vet.-Akad. Handl., I, 14, p. 45, Pl. I, fig. 15 (1873).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109.

162. **Cymbella subaequalis** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. III, figs. 2-4 (Anvers 1880).

"*Cymbella aequalis* W. Smith" Cleve in Kgl. Sv. Vet.-Akad. Handl., n.f. XXVI, 2, p. 170 (1894); excl. syn. W. Smith and Gregory.

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[1] Here again it is necessary to adopt a most inappropriate name for the type variety of a species.

As stated above (p. 215), *Cymbella aequalis* W. Smith has been misinterpreted in the past. The earliest name for the present plant is Grunow's, which I have, accordingly, used.

var. **oblonga** (Fontell) *n. comb.*

Cymbella aequalis ? var. *oblonga* Fontell in Ark. f. Bot., XIV, 21, p. 23, Pl. II, fig. 40 (1917).

(Plate XI, figure 10)

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

163. **Cymbella tumidula** Grunow ex A. Schmidt, Atlas der Diat., Pl. IX, fig. 33 (Leipzig 1875).

"*Cymbella amphicephala* Naegeli" Van Huerck, Syn. Diat. Belg., Pl. II, fig. 6 (Anvers 1880).

(Plate XI, figure 11)

The two figures cited above are both of a form with convex ventral and dorsal margins and sub-rostrate acute apices. The specimens on the slide (Van Huerck, Types du Synopsis des Diatomées de Belgique No. 27, labelled "*Cymbella affinis* var. *tumidula*") on which Cleve in his Synopsis (1894, p. 171) based his description, differ in having the ventral margin almost straight and the apices rostrate and obtuse, thus agreeing with the true *Cymbella amphicephala* Naegeli ex Kützing (*q.v.*).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.

164. **Cymbella turgida** Gregory in Quart. Jour. Microsc. Sci., IV, p. 5, Pl. I, fig. 18 (1856).

E. Arctic Occurrence.

1. ELLESMERE: *Egerton Valley,* Nares expedition (B) B.M.24852 (cf. Dickie 1878, p. 11, sub nom. *Cymbella maculata*).
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.

165. **Cymbella turgidula** Grunow ex A. Schmidt, Atlas der Diat., Pl. IX, figs. 23-6 (Leipzig 1875).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin (F,B) W 5.

166. **Cymbella ventricosa** Agardh, Consp. Crit. Diat., p. 9 (Lundae 1830).

var. **genuina** Mayer in Ber. Naturwiss. Ver. Regensburg, XIV, p. 270 (1913).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **semicircularis** (Lagerstedt) *n. comb.*

Cymbella affinis Kützing var. *semicircularis* Lagerstedt in Bih. Kgl. Sv. Vet.-Akad. Handl., I, 14, p. 43, Pl. II, fig. 20 (1873).

Cymbella ventricosa var. *auerswaldii* (Rabenh.) Meister (1912).

(Plate XI, figure 12)

Lagerstedt's is the earliest varietal epithet applying to this form with subcapitate obtuse apices.

E. Arctic Occurrence.

1. Ellesmere: *Egerton Valley,* Nares expedition (B) B.M.24852; *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.
4. C. Baffin: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

167. **Amphora coffeaeformis** (Agardh) Kützing, Die kies. Bacill., p. 108 (Nordhausen 1844).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.

168. **Amphora dubiosa** Østrup apud Rosenvinge & Warming, The Botany of Iceland II, 1, p. 39, Pl. IV, fig. 59 (Copenhagen 1918).

(Plate XI, figure 14)

It is with some hesitation that I refer this form from Dundas Harbour to the present species, as it is less distinctly capitate than the one shown in Østrup's figure. However, it agrees in dimensions and in the absence of observable structure.

E. Arctic Occurrence.

(? Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.)

169. **Amphora ovalis** (Kütz.) Kützing, Die kies. Bacill., p. 107 (Nordhausen 1844).

var. **affinis** (Kütz.) Van Huerck, Syn. Diat. Belg., p. 59 (Anvers 1885).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.24891.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

var. **pediculus** (Kütz.) Van Huerck, *l.c.*

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares Expedition (B) B.M. 6077, 24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **typica** (Cleve) Meister, Beitr. Krypt.-Flora Schweiz, IV, 1, p. 193 (Bern 1912).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M. 6077; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

170. **Amphora triundulata** *n. sp.*

(Plate XI, figure 13)

Valvis 20-25μ longis, 3-4μ latis, in apices capitatos abrupte contractis, latere dorsuali convexo et triundulato, ventrali paullo concavo et triundulato; rhaphe prope marginem ventralem, quem versus leniter inflexa est; striis in parte ventrali carentibus, in parte dorsuali subradiantibus, 24 in 10μ. Habitat in aqua dulce, Craig Harbour, Ellesmere Island, Canada. Typus in Herb. Mus. Brit., cotypus in Herb. Farlow.

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.

EPITHEMIACEAE

171. **Denticula tenuis** Kützing, Die kies. Bacill., p. 43, Pl. XVII, fig. 8 (Nordhausen 1844).

var. **frigida** (Kütz.) Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XLIX, figs. 26, 35-8 (Anvers 1881).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ex Dickie 1878, p. 11, sub nom. *Denticula frigida*).

var. **intermedia** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XLIX, figs. 22, 25 (Anvers 1881).

E. Arctic Occurrence.

1. Ellesmere: *Cape Sabine,* Nares expedition (B) B.M. 29145 (cf. Cleve 1883a, p. 314, sub nom. *Denticula tenuis* var. *frigida*); *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F, B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

var. **mesolepta** Grunow apud Van Huerck, Syn. Diat. Belg., Pl. XLIX, figs. 23, 24 (Anvers 1881).

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

172. **Epithemia argus** (Ehrenb.) Kützing, Die kies. Bacill., p. 35 (Nordhausen 1844).

E. Arctic Occurrence.

4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

173. **Epithemia cistula** (Ehrenb.) Ralfs apud Pritchard, Hist. Infus. ed. 4, p. 762 (London 1861).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.

174. **Rhopalodia gibba** (Ehrenb.) O. Müller in Engl. Bot. Jahrb., XXII, p. 65 (1895).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

175. **Rhopalodia parallela** (Grunow) O. Müller in Engl. Bot. Jahrb., XXII, p. 64 (1895).

E. Arctic Occurrence.

4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.

NITZSCHIACEAE

176. **Nitzschia acula** Hantzsch ex Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 90 (1880).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

177. **Nitzschia amphibia** Grunow in Verhandl. k. k. Zool.-Bot. Ges. Wien, XII, p. 574, Pl. XVIII, fig. 23 (1862).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.
3. N. Baffin: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

178. **Nitzschia amphioxys** (Ehrenb.) W. Smith, Syn. Brit. Diat. I, p. 41 (London 1853).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891 ; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
4. C. Baffin: *Islands in Cape Hooper Harbour,* Anon. (B) B.M.1904.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61.

179. **Nitzschia angustata** (W. Smith) Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 70 (1880).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F, B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

180. **Nitzschia apiculata** (Gregory) Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 73 (1880).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

181. **Nitzschia clausii** Hantzsch apud Rabenhorst, Alg. Sachs. resp. Mitteleur. No. 944 (Dresden 1860).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.

182. **Nitzschia commutata** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 79 (1880).

E. Arctic Occurrence.

1. Ellesmere: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51.

183. **Nitzschia denticula** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 82 (1880).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. Baffin: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16.
7. N. Labrador: *Burwell,* Polunin July 1936 (F,B) W 61, 129.

184. **Nitzschia dubia** W. Smith, Syn. Brit. Diat. I, p. 41, Pl. XIII, fig. 112, Pl. XIV, fig. 112 (London 1853).

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

185. **Nitzschia frustulum** (Kütz.) Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 98 (1880).

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 51, 67.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46; *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin July and Aug. 1936 (F,B) W 118, 16; *Cape Dorset,* Polunin Aug. 1936 (F,B) W 143.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
8. N. QUEBEC: *Sugluk,* Polunin July 1936 (F,B) W 109; *Wolstenholme,* Polunin Aug. 1936 (F,B) W 52.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

186. **Nitzschia gracilis** Hantzsch in Hedwigia, II, p. 40, Pl. VI, fig. 8 (1860).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

187. **Nitzschia palea** (Kütz.) W. Smith, Syn. Brit. Diat. II, p. 89 (London 1856).

E. Arctic Occurrence.

1. ELLESMERE: *Discovery Harbour,* Nares expedition (B) B.M.6077, 24891; *Craig Harbour,* Polunin Sept. 1936 (F,B) W 30.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 1936 (F,B) W 46.
4. C. BAFFIN: *Clyde,* Polunin Sept. 1936 (F,B) W 148.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.
7. N. LABRADOR: *Burwell,* Polunin July 1936 (F,B) W 61.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (South Bay), Polunin Aug. 1936 (F,B) W 5.

188. **Nitzschia sinuata** (W. Smith) Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 82 (1880).

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14, 55.
5. S. BAFFIN: *Lake Harbour,* Polunin July 1936 (F,B) W 118.

189. **Nitzschia subtilis** Grunow apud Cleve & Grunow in Kgl. Sv. Vet.-Akad. Handl., n.f. XVII, 2, p. 95 (1880).

var. **genuina** Grunow apud Cleve & Grunow *l.c.*

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 55.

var. **paleacea** Grunow apud Cleve & Grunow *l.c.*

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 1936 (F,B) W 67.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 1936 (F,B) W 16.

190. **Nitzschia vitrea** Norman in Trans. Microsc. Soc. London, IX, p. 7, Pl. II, fig. 4 (1861).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 1936 (F,B) W 14.

191. **Cymatopleura librilis** (Ehrenb.) Pantocsek in Res. Wiss. Erforsch. Balatonsees, II, 2, 1 Anhang, p. 91 (Wien 1902).

Cymatopleura solea (Kütz.) W. Smith

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077.

192. **Surirella ovata** Kützing, Die kies. Bacill., p. 62, Pl. VII, figs. 1-4 (Nordhausen 1844).

E. Arctic Occurrence.

1. Ellesmere: *Discovery Harbour* (Nares expedition ?) (B) B.M.6077; *Cape Sabine,* Nares expedition (B) B.M.29145 (cf. Cleve 1883a, p. 314).

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PLATE IX

Figure 1. *Eunotia parallela* Ehrenberg. "Sporangial form", Lake Harbour, Baffin Island. x1000.

Figure 2. *Eunotia pseudoparallela* A. Cleve-Euler. Wolstenholme, N. Quebec. x1000.

Figure 3. *Eunotia perpusilla* Grunow apud Van Huerck var. *perminuta* (Grunow apud Van Huerck) Ross. Clyde, Baffin Island. x2000.

Figure 4. *Navicula minima* Grunow apud Van Huerck var. *atomoides* (Grunow apud Van Huerck) Cleve. Lake Harbour, Baffin Island. x2000.

Figure 5. Ditto var. *typica* Ross. Lake Harbour, Baffin Island. x2000.

Figure 6. *Navicula variabilis* Ross var. *capitata* Ross. Lake Harbour, Baffin Island. x2000.

Figure 7. Ditto var. *gomphonemacea* (Grunow apud Van Huerck) Ross. Lake Harbour, Baffin Island. x2000.

Figure 8. *Navicula zellensis* Grunow var. *linearis* (Østrup) Ross. Lake Harbour, Baffin Island. x2000.

Figure 9. Ditto var. *typica* Ross. Lake Harbour, Baffin Island. x2000.

Figure 10. *Pinnularia brandelii* Cleve. Arctic Bay, Baffin Island. x1000.

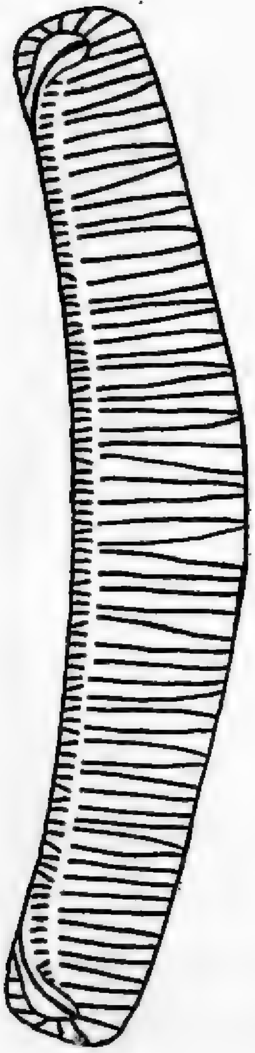
Figure 11. *Pinnularia biceps* Gregory f. *petersenii* Ross. Arctic Bay, Baffin Island. x1000.

Figure 12. *Pinnularia cleveana* Ross. Arctic Bay, Baffin Island. x2000.

Figure 13. *Pinnularia gracillima* Gregory. Cumberland Sound, Baffin Island. x1000.

Figure 14. *Pinnularia divergentissima* (Grunow apud Van Huerck) Cleve var. *hustedtiana* Ross. Wolstenholme, N. Quebec. x1000.

PLATE IX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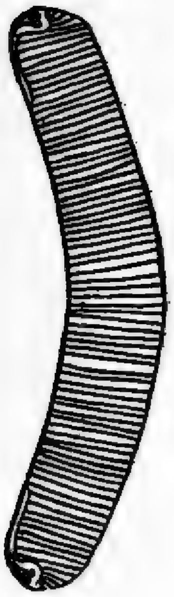
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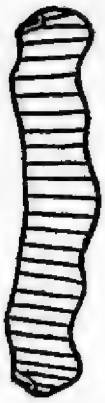
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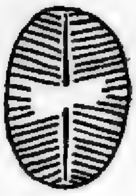
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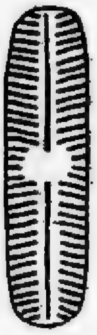
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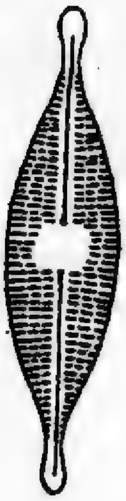
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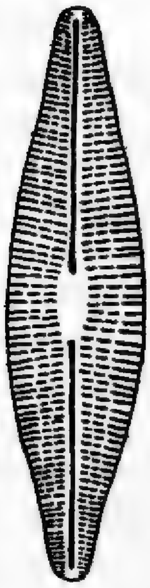
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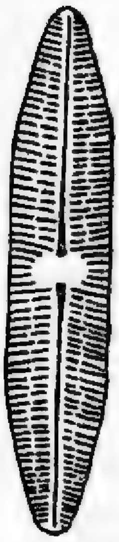
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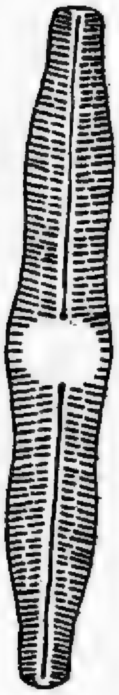
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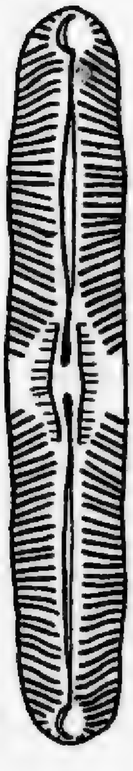
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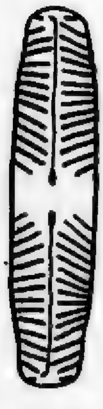
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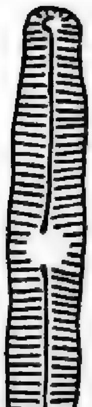
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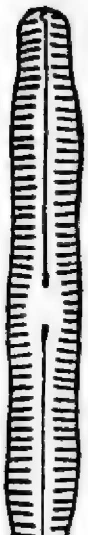
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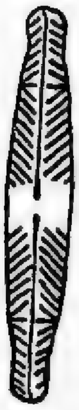
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Plate X

Figure 1. *Pinnularia abaujensis* (Pantocsek) Ross. Arctic Bay, Baffin Island. x1000.

Figure 2. *Pinnularia fasciata* (Lagerstedt) Mereschowsky apud Kozlow var. *inflata* (Pantocsek) Ross. Lake Harbour, Baffin Island. x2000.

Figure 3. *Pinnularia globiceps* Gregory var. *krookii* (Grunow) Cleve. Wolstenholme, N. Quebec. x2000.

Figure 4. *Pinnularia hudsonensis* Ross. Sugluk, N. Quebec. x1000.

Figure 5. *Pinnularia microstauron* (Ehrenb.) Cleve. Burwell, N. Labrador. x1000.

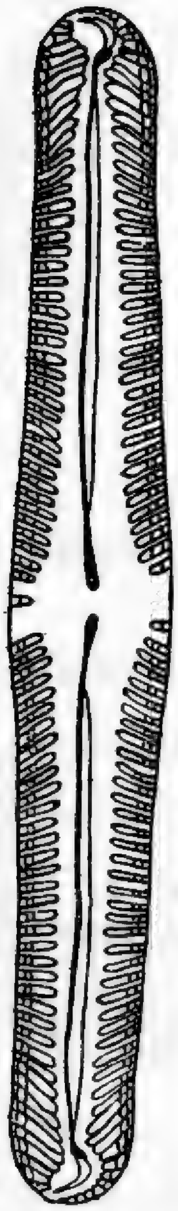
Figure 6. *Pinnularia parvula* (Ralfs apud Pritchard) A. Cleve-Euler. Clyde, Baffin Island. x1000.

Figure 7. *Pinnularia pulchra* Østrup. Burwell, N. Labrador. x1000.

Figure 8. *Pinnularia subsolea* A. Cleve-Euler. Cumberland Sound, Baffin Island. x1000.

Figure 9. *Neidium affine* (Ehrenb.) Pfitzer var. *capitatum* Mölder ex Ross. Dundas Harbour, Devon Island. x1000.

PLATE X



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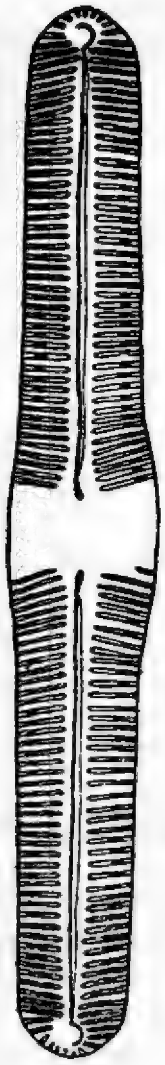

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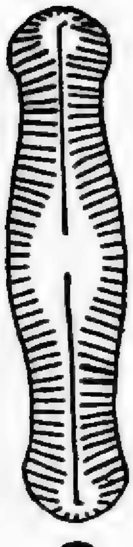

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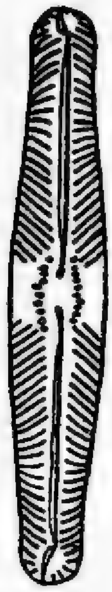

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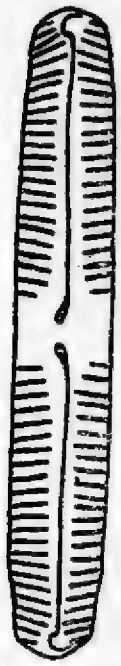

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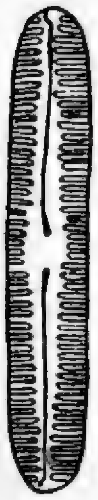

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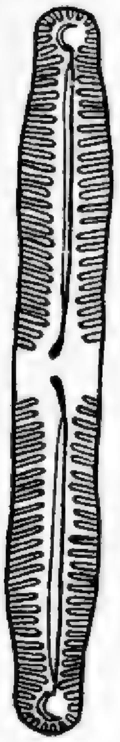

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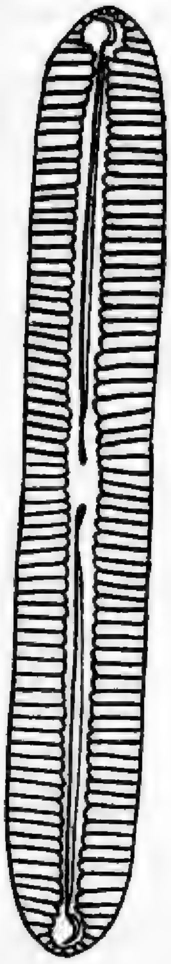

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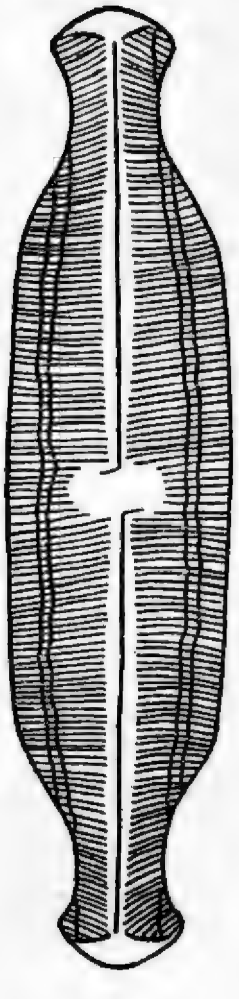

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PLATE XI

Figure 1. *Neidium kozlowi* Mereschowsky apud Kozlow var. *parvum* Mereschowsky apud Kozlow. Arctic Bay, Baffin Island. x1000.

Figure 2. Ditto var. *typicum* Ross. Arctic Bay, Baffin Island. x1000.

Figure 3. *Stauroneis perpusilla* Grunow var. *obtusiuscula* Grunow. Wolstenholme, N. Quebec. x2000.

Figure 4. *Cymbella aequalis* W. Smith ex Greville. Lake Harbour, Baffin Island. x1000.

Figure 5. *Cymbella angustata* (W. Smith) Cleve var. *hybrida* (Grunow ex A. Schmidt) Ross. Burwell, N. Labrador. x1000.

Figure 6. Ditto var. *linearis* (Fontell) Ross. Lake Harbour, Baffin Island. x1000.

Figure 7. *Cymbella scotica* W. Smith var. *incerta* (Grunow apud Cleve & Möller) Ross. Craig Harbour, Ellesmere Island. x1000.

Figure 8. Ditto from Arctic Bay, Baffin Island. x1000.

Figure 9. Ditto var. *naviculacea* (Grunow ex Cleve) Ross. Lake Harbour, Baffin Island. x1000.

Figure 10. *Cymbella subaequalis* Grunow apud Van Heurck var. *oblonga* (Fontell) Ross. Arctic Bay, Baffin Island. x1000.

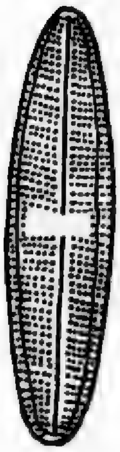
Figure 11. *Cymbella tumidula* Grunow ex A. Schmidt. Arctic Bay, Baffin Island. x1000.

Figure 12. *Cymbella ventricosa* Agardh var. *semicircularis* (Lagerstedt) Ross. Craig Harbour, Ellesmere Island. x1000.

Figure 13. *Amphora triundulata* Ross. Craig Harbour, Ellesmere Island. x1000.

Figure 14. *Amphora dubiosa* Østrup apud Rosenvinge and Warming ? Dundas Harbour, Devon Island. x2000.

PLATE XI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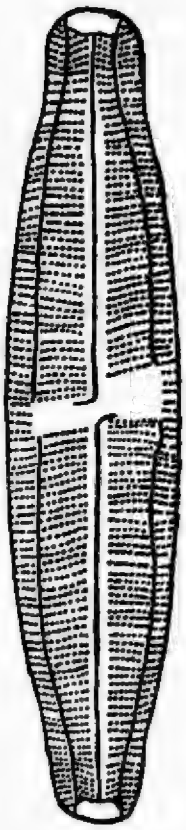
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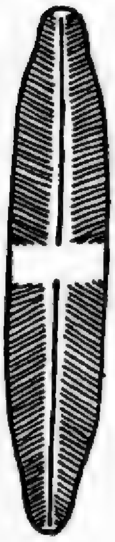
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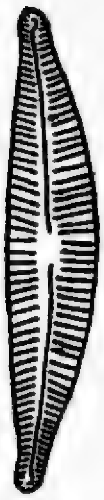
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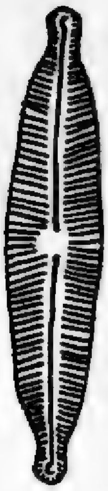
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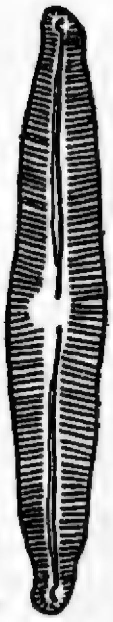
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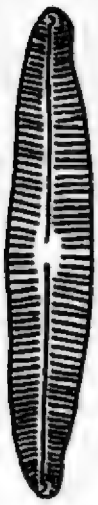
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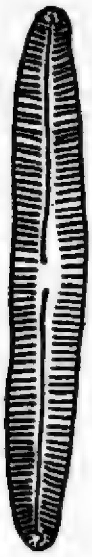
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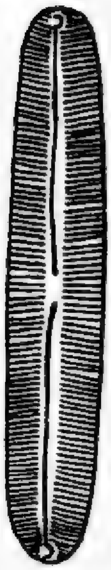
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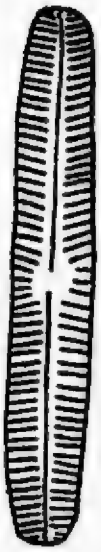
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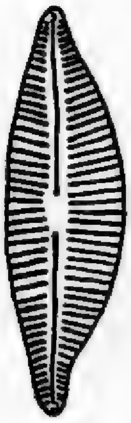
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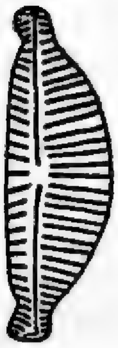
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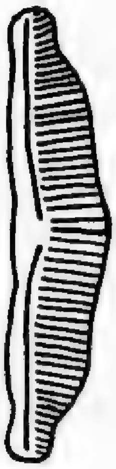
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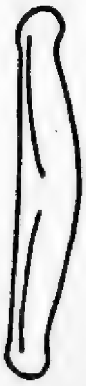
14

4. FUNGI[1]

By David H. Linder†, Ph.D.

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INTRODUCTION

Our knowledge of the fungous flora of the arctic regions has been almost exclusively derived from collections made during various expeditions by the accompanying botanists who, with but few exceptions, had the sole interest of obtaining gatherings of healthy, typical vascular plants. On occasion they would pick up a few of the larger Fungi; but as these phanerogamic botanists were interested in collecting only good material for their studies, it is indeed remarkable that our knowledge of the arctic forms (e.g., among the lower parasitic Fungi) is as detailed as it is, even though admittedly incomplete and sketchy. Most of such facts as we so far possess result from the diligent studies of Rostrup (1888, etc.) and Lind (1926, 1934), who have dealt primarily with the fungous flora of Greenland and Iceland. They, and others, have carefully gone over very large numbers of "healthy" plants and, on the old stems and leaves of the dried specimens, have discovered many interesting forms—mostly saprophytic or weakly parasitic, but also not a few that are parasitic.

It is obvious that this dependence on phanerogamic collections has given a rather one-sided picture of the mycoflora of the boreal regions, and has emphasized the relative abundance of the microfungi at the expense of the macrofungi. These latter, being fleshy and subject to attack by insects and other Fungi that rapidly cause their decay, are very difficult to preserve under the conditions existing during an expedition. In addition, they require the time-consuming task of making the adequate field notes that are so necessary for their determination. However, as time goes on and properly prepared expeditions bring home more collections of the larger Fungi, there is no doubt that the relative proportion of known macro- to micro-fungi will increase. The agaricaceous flora of the alpine region of Europe and North America would indicate this conclusion; indeed the present collection made by Dr. Polunin would alone tend to substantiate this. Unfortunately, however, many of the species of the Agaricaceae could not be determined because, after having been dried, they were spoiled by the subsequent wetting and steaming that resulted from an accident during the homeward voyage of the expedition.

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[1] Contribution from the Laboratories of Cryptogamic Botany and the Farlow Herbarium, Harvard University.

† Died November 10, 1946, a few days before the corrected proofs of this volume were returned to the printer. One of his last acts was the correction of the galleys of his contribution and the settling of a few outstanding questions about it. The botanical world will lament the untimely passing of this distinguished scholar and staunch colleague. N.P., November 1946.)

It is clear from the facts stated above that it is impossible to obtain from the fragmentary bits of available information any precise conclusions as to the distribution or ecological relationships of these lower plant forms. Nevertheless, it can in a general way be said of the Fungi occurring within our Canadian Eastern Arctic area that they fall into four main categories as regards their distribution: viz. (1) those species that are circumpolar in their occurrence; (2) those that may be termed "arctic-alpine"; (3) those that are practically ubiquitous; and (4) those that are primarily of temperate distribution but may occasionally occur in the arctic regions. These categories may be considered to represent a correlation with the degree of adaptation or specialization to the more rigorous conditions of the northern climate; they may also indicate the antiquity of their establishment in the region. As our knowledge is admittedly fragmentary, it is not advisable in this place to go into a lengthy discussion of the problem of distribution; but it may not be amiss here to give a few examples to amplify the preceding statements, and to refer the reader to the work of Lind (1934) for additional information.

If it can be assumed that the difference between the first two categories is only a matter of degree—that the circumpolar forms are specialized to grow only in the polar regions, whereas the arctic-alpine species may grow in the boreal regions and find similar conditions in the high mountains of the temperate zone, extending their ranges to lower altitudes and latitudes—then *Pyrenophora comata* will serve to illustrate the first two categories. This species, which is arctic-alpine in its distribution, is saprophytic on the remains of a wide variety of herbaceous plants. As there is no specialization of parasitism to be considered, it is obvious that its distribution is not limited by the presence or absence of a given host, but *most probably* by the fact that, having become acclimated and adapted to the shorter summer, the long periods of cold, and the longer days during the growing-season, it cannot grow and persist under the warmer conditions of the more temperate regions. This specialization to environmental factors would strongly suggest that the Fungus had been subjected to them over a very long period of time, and that as a result its "habits" have become fixed—a theory that is to some degree substantiated by the wide distribution of the species around the world in the boreal and alpine regions. Many of the saprophytic or weakly parasitic species have the same type of distribution as *Pyrenophora comata*, and additional examples may be found in *Mycosphaerella, Clathrospora, Pleospora, Leptosphaeria,* and other genera in the Pyrenomycetes, as well as in other groups.

When we come to the consideration of the arctic-alpine parasites that are specialized as to host as well as environmental conditions, as for example members of the Peronosporales and Uredinales, the same observations apply equally well. But here the additional determining factor in the occurrence of the Fungus, viz., the presence of a special host, must also be added. It is well known that many of the rusts, even in the temperate zone, require a period of dormancy before the teleutospores will germinate. It is equally obvious, at least to a person who has done any collecting, that the germination of spores and the infection of the host require certain conditions of temperature and humidity. Thus may be explained the abundance of *Peronospora parasitica* on *Capsella bursa-pastoris* in the spring and autumn, and similarly the infection of the young leaves of *Berberis vulgaris* by the basidiospores of *Puccinia graminis* during the early spring months. Therefore, when *Peronospora tornensis* is reported only from Norway, Sweden, Iceland, and now Baffin Island, there is evidence not only that the environmental factors controlling germination and infection are favourable in those localities, and possibly different from those existing farther south, but also that the history of the Fungus is closely tied up with the history of the only known host, *Cerastium alpinum.* As the geographical distribution of *C. alpinum* represents that of a relatively old species, then it may be assumed that the distribution of the parasite is also old, and that host specialization represents a long association between the host and parasite.

Aside from host specialization, the rusts also reflect the effect of boreal conditions over a long period of time. Thus Lind (1934, pp. 110 *et seq.*) remarks that of the 33 arctic rusts known to him, 13 produce perennial mycelia in the host, 12 species omit the aecial and telial stages and reproduce by the uredinial stage, and 9 species are true micro-forms, which produce only teleutospores. The first and third type of response of the rusts appear to be the result of alpine conditions, and Lind says of the second group "The same 12 species may also be found in warmer climates as isolated uredo-forms, consequently it is not even arctic conditions that have impressed themselves on the Uredineae, but rather conversely, that these species with a single spore form are best suited for propagation in the short polar summer." Although it is true that in temperate regions the rusts produce systematic infection and also omit stages in the life cycle, nevertheless it should be emphasized that the proportion of rusts that do this in the Arctic is much greater than in temperate regions, which would seem to indicate that arctic conditions have left their impress on the organisms.

Among the "ubiquitous" species, *Cintractia caricis* stands out as an excellent example. This smut, parasitic on members of the Cyperaceae, and more especially on the genus *Carex,* is to be found in the tropics. From here its range extends northward to northern Baffin Island in the New World and equally far north in the Old World. The facts that this species has not shown a very marked degree of specialization of parasitism and that it is capable of growing under such a wide variety of conditions, suggest that it is relatively young and vigorous. From this it may be deduced that, speaking comparatively, it is a recent arrival in the Far North. In this connection it would be interesting to learn whether, during its migration, there had developed any strains that may be differentiated by determining the optimum temperature for germination and growth, and that could be correlated to a greater or lesser degree with the latitude at which they grow.

The cosmopolitan or ubiquitous species in the Far North are very few. On the other hand, a considerable number of temperate species reach the north and apparently exist without difficulty, so that it is sometimes hazardous to attempt to draw the line between temperate species going north and the arctic ones that persist in alpine regions to the south. However, the Erysiphaceae form a family concerning which there can be little doubt that the distribution is mainly temperate. There are a few species in the tropics, very infrequently found in the perithecial stage, but most of the species are confined to the temperate zone, and not only produce an abundance of the oidial but also of the ascigerous stage during the proper season. From a maximum number in the temperate zone, the species rapidly fall off towards the north until in the circumboreal zone there remain only five (or perhaps six). According to Lind (1934, p. 16), three of the five species produce only oidia, and the other two produce perithecia but scarcely any oidia. In other words, the Erysiphaceae appear to be a relatively old and conservative group that have become specialized to temperate conditions, and as a result have scarcely been able to persist north of their optimum temperature range. Thus the antiquity of any group of Fungi may to some extent be indicated by its distribution in relation to climate, or in the parasitic species, to climate and host, and by the degree of specialization of parasitism.

In the preceding paragraphs I have attempted to show that there are problems in the study of the distribution of Fungi that parallel those of the flowering plants, in the hope of encouraging future collections of these interesting forms. With additional information (especially as to the relations between the parasites and their hosts), the knowledge of the mycology of the northern countries may well be able to substantiate theories concerning the geographic distribution of the phanerogams—at least when the two fields, now regarded as distinct, become correlated.

The present report on Dr. Polunin's collection of Fungi made during his expedition of 1936[1] is to be considered merely as a contribution to our knowledge of a certain large part of Arctic America concerning which very little has been published. Indeed, the floras of Greenland, Iceland, northernmost Europe, Russia, and most other arctic and subarctic lands are far better known than that of the American Arctic; still more forcibly do they indicate how fragmentary is our knowledge of the Canadian Eastern Arctic. For this reason, no attempt has been made to go through the scattered literature and to extract all the records of Fungi that have been reported from the region. Also, as a very complete bibliography has been furnished by Lind (1934, pp. 148-52), it has not been considered desirable to duplicate that list here. However, three papers, by Dearness (1928), Polunin (1934), and Jennings (1936), dealing chiefly with the fleshy Fungi of this region, are not in Lind's bibliography.[2] The lists of Fungi reported by these three authors may with advantage be repeated here:

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[1] Plus a few specimens that I had collected during the Canadian Eastern Arctic Expedition of 1934. Unfortunately, it was impossible on either occasion to give special attention to the gathering of Fungi, so the resulting collections, on which Dr. Linder's report is based, were scrappy in the extreme. (N.P.)

[2] Another report that may be mentioned here is that of "*Cantharellus aurantiacus* Fr.", "*Bovista nigrescens* L.", and "*Russula* sp." from "Chidley Peninsula, lat. 60°-60°30′N." (Anon. 1907, p. 88). (N.P.)

DEARNESS (BAFFIN ISLAND)

Lycoperdon gemmatum Fr.
Amanitopsis vaginata Fr.
A. vaginata var. *livida* Peck
Hygrophorus sp.
Russula purpurina Quél. & Schultz
Russula sp.
Lactarius sp.
Entoloma sericeum Fr.
Hebeloma crustuliniforme Fr.
Hebeloma sp.
Hypholoma sp.

POLUNIN (AKPATOK ISLAND)

Peziza acetabula L.
Sphaerospora asperior (Nyl.) Sacc.
Helvella lacunosa Afz.
Ustilago caricis Fuck.
Boletus reticulatus (Schaeff.) Boud.
Boletus sp.
Cantharellus cibarius Fr.
Cortinarius spp.
Dictyolus muscigenus (Bull.) Quél.
Hygrophorus sp.
Hypholoma sp.
Inocybe violacea Pat.
Inocybe spp.
Laccaria laccata (Scop.) B. & Br.
Lactarius vellereus Fr.
Mycena polygramma Quél.
Mycena spp.
Omphalia sp.
Psilocybe semilanceata Fr.
Russula emetica Fr.
R. ochroleuca Fr.
Russula sp.
Lycoperdon perlatum Pers.
Lycoperdon sp.

JENNINGS (SOUTHAMPTON ISLAND)

Calvatia cretacea (Berk.) Lloyd
Russula emetica "(Schaeffer) Persoon"
Russula sp.
Hygrophorus hudsonianus Jennings *(n.sp.)*
Psathyrella disseminata (Pers.) Fr.
Cortinarius sp.
Tubaria furfuracea (Pers.) Sm.
Lactarius sp.

A final word should be said concerning the arrangement of the taxonomic part of this present paper. The species are first divided into the three major classes of Fungi and under these they are then arranged according to orders, after which the genera follow alphabetically. Because of the small numbers of species represented in many of the orders, a further subdivision into families is considered unnecessary.

The material is preserved in the Farlow Herbarium of Harvard University, to which it was presented by Dr. Polunin. It includes specimens of the following orders, which are dealt with in the present report on the pages indicated:

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PHYCOMYCETES

CHYTRIDIALES

1. Micromyces minimus *n. sp.*

(Plate XII, figure E; Plate XV, figure A)

Prosori globose, light coloured to deep yellow-brown, of two types: (1) large 10·5-16·5μ in diameter, ornamented with short, straight, and relatively thick spines 0·5-0·75μ long; and (2) small prosori 7·5μ in diameter and smooth.

Solitary or several in a cell of *Zygnema* sp., the infected host cells not inflated, but almost twice as long as the normal host cell.

Prosoris globosis, laete coloratis vel aurantio-brunneis, formarum duarum (1) magnis, 10·5-16·5μ diametro, spinulis brevibus, rectis, proportionate crassis, 0·5-0·75μ longitudine ornatis; (2) prosoris parvis, laevibus, 7·5μ diametro. Solitariis vel pluribus in cellulis *Zygnematis* sp., cellulae hospitis infectae non inflatae autem elongatae.

Of the three species of *Micromyces* discovered in Dr. Polunin's Canadian Eastern Arctic material, this is the most variable. When only one thallus is present in the host cell, the resulting prosorus is relatively large and is ornamented with short spines. If, however, the number of prosori per cell is increased, they become proportionately smaller and may often be smooth-walled (cf. Plate XII, figure E). The interesting point in this connection is that although the spiny prosori vary in size according to their number in the host cell, the smooth-walled prosori remain remarkably constant in size. It is probable that this constancy may be explained by the nuclear condition of the parasite, as a result of which the ornamented resting spores may prove haploid and the smaller, smooth ones diploid.

Whatever may be the life-history of this species, it is quite different morphologically from any heretofore described in this genus or in *Micromycopsis*. In size it approaches *Micromycopsis cristata* var. *minor* Sparrow (cf. 1932, pp. 273-4), but in the present species the spines are never helically arranged, and the spinose sporangia are larger than are those of Sparrow's plant. From *M. wheldenii*, to be described below, this species may readily be separated by the size of the prosori and by the fact that it does not cause a bulbous enlargement of the host cell, but rather an elongation. Frequently the cells that have been infected are more than twice the length of the normal vegetative cell, and mostly they are longer than the dividing host cell. In older specimens the ornamentation of the spiny prosori may be obscured by the discoloured protoplasm that appears to encrust the spines, giving them a roughened and wart-like appearance.

Occurrence.

5. S. BAFFIN: *Lake Harbour*, Polunin July 28, 1936—in *Zygnema* sp. (slide No. 2708, TYPE).

2. **Micromyces echinocystis** *n. sp.*

(Plate XII, figures A-C; Plate XV, figure B)

Prosori ellipsoid, broadly ellipsoid, or more rarely globose, 24-27-(40·5) x 19·5-21-(27)μ, subhyaline to yellowish, ornamented with numerous, curved, pointed spines 1·9-3·3μ long and 1-1·5μ in diameter at the base.

Mostly solitary in the cells of *Zygnema* sp. and *Mougeotia* sp., not causing any pronounced enlargement of the host cell, although there may be a slight enlargement and some elongation.

Prosoris ellipsoideis, late-ellipsoideis vel rare globosis, 24-27-(40·5) x 19·5-21-(27)μ, subhyalinis vel luteis, spinulis curvatis aculeatis ornatis, 1·9-3·3μ longitudine, basem 1-1·5μ diametro. Plerumque solitariis in cellulis *Zygnematis* sp. et *Mougeotiae* sp.

Micromyces echinocystis is well characterized by the large, usually ellipsoid prosori, which are ornamented with rather long and sharp, curved spines that are fairly evenly distributed over the surface. It is thus differentiated from *M. mesocarpi* of which the walls are ornamented with verrucose or wart-like projections.

When this Fungus grows in *Mougeotia* there is apparently at most only a slight swelling of the host cell, and but little elongation (cf. Plate XII, figure C), whereas in the cells of *Zygnema* there is a slight (or very rarely a pronounced) bulging of the host walls, and a marked increase in length, the infected cells remaining about as long as normal cells undergoing division. It should also be pointed out that the prosori formed in *Mougeotia* are considerably longer than those formed in *Zygnema*, although in all other respects they appear identical.

Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936—in *Zygnema* sp. and *Mougeotia* sp. (slide No. 2709, TYPE).

3. **Micromyces wheldenii** *n. sp.*

(Plate XII, figure D; Plate XV, figure C)

Prosori light coloured to yellow-brown, globose, 22·5-30μ in diameter, covered by a spiny membrane, the spines hyaline, up to 2μ long, straight, bluntly or sharply pointed, and arising from the coloured subhemispherical bases.

Solitary in *Zygnema* sp., causing a globose or elongate-ellipsoid enlargement of the host cell.

Prosoris pallide coloratis vel luteo-brunneis, globosis, 22·5-30μ diametro, membranis spiniferis tectis; spinulis hyalinis, usque 2μ longitudine rectis, retusis vel acutis, ex fundamentis coloratis subhemisphericis oriundis. Solitariis in cellulis globosis vel ellipsoideis dilatatis *Zygnematis* sp.

I take great pleasure in dedicating this species to Dr. Roy M. Whelden, who, in determining the Algae for another part of this report, has called my attention to this and other phycomycetous parasites that occurred on the specimens he was studying.

This species is the only member of the genus collected in the Canadian Eastern Arctic that consistently causes a pronounced hypertrophy of the host cell (cf. Plate XV, figure C). Often only a single cell in the filament is infected, but not infrequently many may be invaded, and indeed on occasion as many as five consecutive cells may contain the Fungus and as a result form a chain of enlarged spherical or ellipsoidal bodies. Also characteristic of this species are the numerous, short, hyaline spines that arise from the coloured subhemispherical projections of the walls. As appears to be true of the two preceding species, the spines seem to be connected by a thin hyaline membrane. It is quite possible, however, that they may be embedded in a hyaline matrix. Although the hyaline halo is evident around the prosori; it is extremely difficult to make out the general structure, because the material has been preserved in alcohol-glycerine.

Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936—in *Zygnema* sp. (slide No. 2716, TYPE).

As the material involved in the present studies has all been preserved, it is impossible to make out the developmental history of these forms, and accordingly it is difficult to say whether the species described above should be placed in *Micromyces* or *Micromycopsis.* With the exception of one smooth-walled species of the latter genus, all the members are characterized by the spiral arrangement of spines on the prosori. As our present three species do not show any clear-cut spiral arrangement of the ornamentation, I have arbitrarily assigned them to *Micromyces.* Hence for purposes of comparison with previously described forms I append herewith a key to the known species of *Micromyces* and *Micromycopsis.* It is based entirely on descriptions compiled from the scattered literature.

1. Prosori smooth (*See* also *Micromyces minimus*) 2
1. Prosori with granular or spine-like ornamentation 3
2. In zygospores of *Spirogyra;* prosori 8-13µ diam. *Micromyces spirogyrae* Skvort.
2. In vegetative cells of *Zygogonium;* prosori 11µ diam. No hypertrophy.. *Micromycopsis fischeri* Scherf.
3. Prosori typically spherical, more rarely ovoid 4
3. Prosori typically ellipsoid or broadly ellipsoid, occasionally globose 10
4. Spines seriate or helically seriate 5
4. Spines scattered, not obviously seriate 6
5. Prosori (11-12)-14-(16)µ diam. or 13-18 x 16-20µ, globose or ovoid. In *Hyalotheca dubia* Kütz.............................. *Micromycopsis cristata* Scherf.
5. Prosori 8-(10·4)µ diam. .... *M. cristata* var. *minor* Sparrow
6. Spines 4µ or longer, up to 24 spines per prosorus.............................. 7
6. Spines less than 4µ long, more than 24 per prosorus 9
7. Spines 12-22µ long; prosori (10)-21-(33·6)µ diam. ?Hypertrophy in *Spirogyra* .... *Micromyces longispinosus* Couch
7. Spines 4-6µ long; prosori 11-16·8µ diam.............................. 8
8. Zoospores 1-2µ diam., globose or subglobose. In *Zygogonium, Mougeotia,* and *Spirogyra.* Enlargement of host cells.............................. *Micromyces zygogonii* Dang.
8. Zoospores 6 x 2µ, spindle-shaped. In *Mougeotia.* Hypertrophy? .... *Micromyces petersenii* Scherf.
9. Prosori 22·5-30µ diam.; spines up to 2µ long; in *Zygnema* sp. causing globose or ellipsoid enlargement of host cell.............................. *Micromyces wheldenii* Linder

9. Prosori of two types (1) spinose, 10·5-16·5μ diam.; (2) smooth, 7·5μ diam. In *Zygnema* sp. causing elongation of host cell..........*Micromyces minimus* Linder
10. Wall of prosorus granular or verrucose, prosori 18-39 x ± 11μ. In *Mesocarpus*, causing no hypertrophy ....*Micromyces mesocarpi* De Willd.
10. Wall of prosorus with numerous curved spines 1·9-3·3μ long; prosori 24-27 x 19·5-27-(40·5)μ. In *Mougeotia* and *Zygnema*, causing elongation of the host cell. .... *Micromyces echinocystis* Linder

4. **Olpidium endogenum** (A.Br.) Schröter, Krypt. Fl. Schlesien III, 1, p. 180 (1889).

Chytridium endogenum A. Braun

= *Chytridium intestinum* A. Braun

Olpidium endogenum is apparently not a rare species in Europe, where Fischer (1892, p. 24) records it as parasitizing the following genera of the Desmidiaceae: *Closterium, Cosmarium, Docidium, Euastrum, Micrasterias, Penium, Pleurotaenium*, and *Tetmemorus*. Sparrow (1936, p. 427) reports with doubt the occurrence of this Fungus as a parasite of *Mougeotia* and *Zygnema* in England. The only record that I have been able to find of the occurrence of this species in North America is that of Wolle (1887, p. 203, sub nom. *Olpidium intestinum*), who states that it occurs in *Closterium*, but unfortunately makes no mention of the place of collection. It may perhaps be inferred that the plants came from Pennsylvania. At all events it is doubtful if the specimen was collected far to the north, hence our present report is worthy of note as it probably represents by far the most northerly collection of the Fungus in this hemisphere, as well as an additional host for the species in North America.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield*, Polunin Aug. 20, 1936—in *Penium margaritaceum* (Ehrenb.) Bréb. (slide No. 2701) and in *Closterium ralfsii* var. *hybridum* Rabenh. (slide No. 2703).

5. **Olpidium utriculiforme** Scherffel, Archiv f. Protistenk., LIV, pp. 213-5, Pl. X, figs. 84-7 (1926).

This species was originally described from Czechoslovakia where it was found to parasitize *Cosmarium* sp. and *Euastrum* sp. The thalli vary greatly in size, even in the same host; but even the smaller thalli appear to be more robust than in the closely related *O. saccatum* Sorokin, as figured by Scherffel. No resting spores were observed.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour*, Polunin July 27, 1936—in *Euastrum bidentatum* Nägeli (Whelden No. 140).
10. W. Coast Hudson Bay: *Chesterfield*, Polunin Aug. 20, 1936—in *Cosmarium conspersum* Ralfs, *C. undulatum* Corda,[1] and *Cosmarium* sp. (slide No. 2707), (Whelden Nos. 23, 84).

6. **Phlyctochytrium magnum** *n. sp.*

(Plate XII, figure H)

Sporangia extramatrical, obovoid, 23·8 x 18·5μ, ornamented below the apex by four pairs of short, relatively stout, bluntly pointed, divergent spines, which are up to 4μ long, and which are joined at the base; within the host is formed an irregular, broadly pyriform vesicle that measures up to 12·5μ in diameter.

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[1] Typical *Cosmarium undulatum* was not found at Chesterfield, but only var. *minutum* Wittrock. This latter was the host of the *Olpidium utriculiforme* occurring in tube No. 84—cf. p. 94. (N.P.)

Parasitic on *Zygnema* sp.

Sporangiis extramatricis obovoideis, 28·8 x 18·5μ, sub apice spinulis paribus quater ornatis; spinulis brevibus nonnihil robustis, obtuse aculeatis, divergentibus, 4μ longitudine, basem junctis; vesiculis intramatricis irregulariter late pyriformibus, usque 12·5μ diametro. Hab. in cellulis vivis *Zygnematis* sp.

The species in the dentigerate section of the genus *Phlyctochytrium* are not at all well defined, but it seems evident that the present one is to be distinguished from all known allies by its characteristic shape, by the four pairs of teeth, which are joined only at the very base, and by the large dimensions of the sporangium. Indeed, the sporangium is almost twice as large as any that has been recorded in other species. Although only a few sporangia were observed, there was no indication that more than one intramatrical vesicle is formed in this species—not two or more as recorded by Rosen (cf. 1887, pp. 253-67) for the closely related *P. zygnematis* (Rosen) Schröt.

Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936—parasitic on *Zygnema* sp. (slide No. 2718, TYPE), (Whelden No. 104).

7. **?Rhizophidium digitatum** Scherffel, Archiv f. Protistenk., LIV, p. 223, Pl. X, figs. 103-4 (1926).

(Plate XIII, figure G)

This Fungus was found on a cell of *Zygnema* sp. that had been parasitized by *Lagenidium rabenhorstii.* In spite of the relatively close agreement with Scherffel's description, this species is placed here with some hesitation. The sporangium, with its crown of five, incurved, broadly tapering, finger-like processes, measures 9μ in diameter. The finger-like ornaments are 3·5μ long and 1·9μ in diameter at the base, from which they taper to the rounded apices. These measurements agree fairly closely with those given by Scherffel, who states that the sporangia are 8μ in diameter and are provided with a crown of five tooth-like processes, each measuring 4μ in length and 2μ in diameter at the base. As depicted by Scherffel, however, there are slight differences in the teeth forming the crown, as he shows them to be relatively straight and rather sharply pointed. He also depicts the sporangium as surmounting a carrot-shaped basal cell. In the present specimen, which has been preserved in glycerine-alcohol and hence is cleared, it is difficult to discover whether there is a basal cell within the host wall, as is suggested in Plate XIII, figure G, or whether the structure concerned is a cluster of rhizoids wrapped around a part of the content of the host cell. If there is an intramatrical vesicle the species should be placed, if operculate, in the genus *Chytridium*—or, if inoperculate, in *Phlyctochytrium.* On the other hand, if the structure shown as an intramatrical vesicle is in reality a cluster of rhizoids, then this species is properly placed in *Rhizophidium.*

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29, 1936—on *Zygnema* sp. parasitized by *Lagenidium rabenhorstii* Zopf (slide No. 2704).

ANCYLISTALES

8. **Ancylistes closterii** Pfitzer, Monatsber. Berlin Akad., pp. 379-98, figs. 1-16 (1872).

This Fungus, parasitic on various species of *Closterium,* appears to be not uncommon in Europe where it has been found in Germany, France, and Bohemia. In the United States it has been recorded only from Long Island, New York, and North Carolina. More recently (June 1937) I collected it at Plymouth, Massachusetts. It would, therefore, appear that the species is fairly widespread in the temperate regions and only awaits further collecting. At all events the present specimen, which is in the resting spore stage, represents the northernmost collection of the species in the Western Hemisphere.

E. Arctic Occurrence.

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 20, 1936—in "*Closterium intermedium* Ralfs"[1] (slide No. 2597).

9. **Lagenidium rabenhorstii** Zopf, Verh. Bot. Ver. Brandenb., XX, p. 77 (1878).

(Plate XIII, figures A-B)

L. rabenhorstii is apparently not uncommon in Europe. Fischer (1892, p. 80) reports the species as occurring in *Spirogyra, Mesocarpus,* and *Mougeotia* in spring and summer, and adds that the sexual stage is found from June onwards. Sparrow (1932, p. 289) reports the species as occurring on *Spirogyra* in Massachusetts, New York, and Montana. It is, therefore, of interest to record the specimen cited below, which grew in *Zygnema* sp. at Wakeham Bay, a station far to the north of any from which it has hitherto been reported on the American continent.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29, 1936—with oospores in *Zygnema* sp. (slide No. 2704).

SAPROLEGNIALES

10. **Aphanomyces norvegicus** Wille, Skr. Vid.-Selsk. Christiania Math.-Naturvid. Kl. 1899, 3, p. 9, figs. 14-27 (1899).

(Plate XIII, figures C-F)

This species differs from *A. phycophilus* de Bary, which also parasitizes members of the Conjugatae, in having brown oogonial walls that are ornamented with tapering and either straight or somewhat curved, finger-like spines. As previous authors have failed to give the dimensions of the oogonia, it seems desirable to amplify existing descriptions with this information. The oogonia, exclusive of the spines, vary from (19·5)-22·5-27-(30)μ in diameter and are spherical or subspherical; the spines measure 3-7·5-(9)μ in length and are 1·5-3·7μ in diameter at the base, being mostly simple although occasionally branched. The sterile or vegetative mycelium of this Fungus has been described as winding around the host cells, but Wille (*l.c.*) figures the mycelium as running along the host filaments and sending out side branches, which either wrap around the host cells or else penetrate them at the point of contact. My own observations fully substantiate Wille's findings, as the mycelium has been seen to run parallel to the host filaments (cf. Plate XIII, figure E) for a considerable proportion of their length, with only an occasional bend or twist—the main contact with the host being maintained by the haustorium-like side branches. After the actual haustoria have wound around inside the host cell, they apparently give rise to branches, dense with protoplasm, which pass out through the host wall. These, without modification, serve as zoosporangia (cf. Plate XIII, figure F), and from them the zoospores are subsequently liberated.

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[1] *See* footnote (¹) on page 66.

The species has previously been reported from North America by Sparrow (1933, p. 532), growing on *Spirogyra* sp. in New York State, and from Europe by Wille (*l.c.*) on *Spirogyra, Zygnema,* and certain of the Desmidiaceae at high elevations in central Norway.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin (two collections) Sept. 9, 1936—on *Zygnema* sp. (slide Nos. 2599, 2560).

Peronosporales

11. **Peronospora cochleariae** Gäumann, Beitr. Krypt. Schweiz, V, 4, p. 280 (1923).

This species was originally described from Denmark, where it was found growing on *Cochlearia danica* L. Gäumann states (*l.c.*) that it is confined to that country, but adds "Zur vorliegenden Art gehört vielleicht auch die von Lind (1913, p. 64) für Dänemark und von Wilson (1908, p. 546) für Dakota erwahnte Peronosporaform auf Cochlearia Armoracea L." The specimen listed below on *Cochlearia officinalis* s.l. agrees very closely in all details with the description of the Fungus as it occurs on *C. danica*; hence there is little doubt in my mind that it is the same. This being the case, it would seem probable that the range of the Fungus will prove to be approximately coextensive with that of the host.[1]

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936—on *Cochlearia officinalis* L., *s.l.*, No. 1480a-6.

12. **Peronospora parasitica** s.l. (Pers.) Tulasne, Compt. Rend., XXXVIII, p. 1103 (1854).

Gäumann (1918),[2] on the basis of biometrical studies, has segregated a large number of species from the old *P. parasitica,* which was formerly thought to grow on nearly all members of the Cruciferae. Of the new species, he recognized two as occurring on hosts belonging to the genus *Cardamine: P. cardamines-laciniatae* Gäum. and *P. dentariae* Rabenh. The conidia of *P. cardamines-laciniatae* measure (12)-18-22-(28) x (11)-14-18-(21)μ, whereas those of *P. dentariae* are (11)-15-19-(23) x (9)-11-14-(18)μ. Oogonia have not yet been discovered in the former species, but they have been observed in the latter to vary from 42-51μ in diameter. In view of the fact that conidia are lacking in the material at hand, and only oogonia are present (measuring (37·5)-42-54μ in diameter), it is impossible to tell which of the two *Cardamine*-inhabiting species is present. Therefore, although it is possible that the Southampton Island material should be referred to *P. dentariae*, it has seemed more desirable to retain it as *P. parasitica* in the older and broader sense, with the hope that future collections from the same region and on the same host will provide both conidia and oogonia in sufficient quantity to make possible a more accurate determination.

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[1] *Cochlearia officinalis* s.l. is circumpolar, occurring almost all over the Arctic and Subarctic. However, the taxonomy of the group is notoriously difficult and it may be that the *groenlandica* element, which occupies the northernmost stations and has among other "characters" a different chromosome number, represents a species entirely distinct from the true *C. officinalis* and also from the plant that acted as host to *Peronospora cochleariae* at Wakeham Bay. (N.P.)

[2] Cf. also Beih. Bot. Centralbl., XXXV, 1, pp. 438-42 (1918). (N.P.)

Both of the above-mentioned microspecies of *Peronospora* are widely distributed in temperate and alpine regions, and *P. dentariae* has been reported from Iceland.

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 22, 1936—on *Cardamine bellidifolia* L., No. 2279a-1.

13. **Peronospora septentrionalis** Gäumann, Beitr. Krypt. Schweiz, V, 4, p. 65 (1923).

This species, one of the several segregates from *P. alsinearum* Casp., is characterized by the size of the conidiophores, which are from 300-700μ long and 7-14μ in diameter at the base, by the size of the conidia, which are (20)-26-33-(40) x (9)-16-20-(26)μ in diameter, and, finally, by the host upon which it is a parasite, *Cerastium cerastoides*[1] (L.) Britton (*C. trigynum* Vill.). Although no large series of spore measurements could be made from the sparse material available, the conidia appear to agree very closely in size with the dimensions given by Gäumann (*l.c.*). Similarly, the basal diameter of the conidiophores is well within the range given by Gäumann, as it varies from 9-13·5μ.

According to Gäumann (*l.c.*), this Fungus has been collected in Iceland, Norway, and Switzerland, and has doubtfully been reported from the United States. It is more than likely that *P. septentrionalis* does occur in the United States, even as the specimen cited below from a northern station indicates its presence on the North American continent. From its distribution, at least as far as this is at present known, the species would appear to be an arctic-alpine one.

E. Arctic Occurrence.

7. N. Labrador: *Burwell*, Polunin Sept. 25, 1936—conidia and oospores on *Cerastium cerastoides*[1], No. 26[illegible]3b-8.

14. **Peronospora tornensis** Gäumann, Beitr. Krypt. Schweiz, V, 4, p. 62 (1923).

P. tornensis closely resembles *P. septentrionalis* in having conidiophores that are 300-700μ long, but unlike the latter species (in which these structures are from 7-14μ in diameter) those of the former measure 5-9μ in diameter. In the specimen cited below, the conidiophores are mostly 6-7·5μ in diameter and have a marked brownish coloration.

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[1] This is the correct spelling, the basic being *Stellaria cerastoides* L. In Part I, I unfortunately employed Britton's rendering—*See* Mem. Torr. Bot. Club, V, p. 150 (1894). (N.P., October 1946.)

According to Gäumann (*l.c.*) this species occurs in Norway, Sweden, and Iceland.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—on *Cerastium alpinum* L., *s.l.,* No. 2295a-54.

ASCOMYCETES

Taphrinales

Taphrina carnea Johanson, Öfv. Kgl. Vet.-Akad. Förhandl., Stockholm, 1885, 1, p. 43, Pl. I, figs. 5-6 (1885).

This Fungus, which chiefly parasitizes *Betula odorata, B. intermedia,* and *B. nana,* has an arctic-alpine distribution. It has been recorded from North America, Greenland, Iceland, Norway, Sweden, Germany, Austrian Tyrol, and Russia. Because of its wide range, and because host plants are present within the region covered by this report, it seems desirable for the sake of completeness to mention this species, despite the fact that it has so far been collected only to the south of our area.

Subarctic Regions.

Port Harrison, Quebec, Polunin Aug. 6-9, 1936—on *Betula* sp.,[1] No. 1749a-1.

Erysiphales

15. **Sphaerotheca humuli** (DC.) Burrill, Bull. Illinois State Lab. Nat. Hist., II, p. 400 (1887).

Erysiphe humuli DC.

Sphaerotheca macularis (Fr.) Lind

As Lind (1934, p. 16) has remarked, most members of the order Erysiphales have a relatively southern distribution. Nevertheless, he lists five species that he has encountered in northern regions, viz., *Erysiphe graminis* Fr., *E. cichoracearum* Fr., *Sphaerotheca macularis* (Fr.) Lind, *S. fuliginea* (Fr.) Lind, and *Podosphaeria clandestina* (Fr.) Lev. Of these, only the last two have been found to develop perithecia in the Far North, the remainder producing only the conidial or oidial stage. The present material is no exception, as only the conidial stage is present, and that in merely small amount.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20, 1936—on *Potentilla hyparctica* Malte,[2] No. 2246a-16.

Myriangiales

16. **Pyrenophora androsaces** (Fuckel) Saccardo, Syll. Fung. II, p. 284 (1883).

Pleospora androsaces Fuckel

Pleospora fuckeliana Niessl.

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[1] This was *Betula glandulosa* Michx., which is already known to act as host to *Taphrina carnea.* (N.P.)

[2] *P. emarginata* Pursh of Part I, but unfortunately this is antedated by *P. emarginata* Desfontaines, Tabl. Ecol. Bot., p. 177 (1804)—*See* Fernald in *Rhodora,* XLV, pp. 111-2 (1943). (N.P., October 1946.)

P. androsaces is found on a wide range of host plants, upon which it appears to be weakly parasitic or saprophytic. According to Lind (1934, p. 50) this species is "Very common in arctic regions far up in North Greenland, 83° 6′, it was unknown in Scandinavia till I found it in some of the northernmost localities (Tromsø, Nuolja 1000 m.); entirely wanting between 68° and 47°, where it is found again on the highest mountains (1000 m. to 2313 m.) in Switzerland, Tyrol, and Oberkrain."

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936—on dead basal leaves of *Draba fladnizensis* Wulf., *s.l.,* No. 2381a-41.

17. **Pyrenophora comata** (Awd. & Niessl.) Saccardo, Syll. Fung. II, p. 286 (1883).

(Plate XIV, figure F)

This species, like the preceding, is saprophytic or weakly parasitic and manages to grow on a very wide range of host species, from *Anemone* to *Taraxacum.* But although it is almost omnivorous, its occurrence is apparently confined to strictly arctic-alpine habitats.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936—on old leaves of *Oxyria digyna* (L.) Hill, No. 2470a-26.

HYPOCREALES

18. **Claviceps purpurea** s.l. (Fr.) Tulasne, Ann. Sci. Nat. sér. 3, XX, pp. 45-9, Pls. I-III (1853).

It is quite possible that this material would be better placed with *Claviceps microcephala* (Wallr.) Tulasne, as the sclerotia are considerably smaller than are those of the Fungus that occurs on cereal grains. However, because the ascigerous stage is absent, it seems best to apply *C. purpurea* in its broadest sense to the specimens listed below. This latter is widely distributed in temperate and arctic regions.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 12, 1934—on *Arctagrostis latifolia* (R.Br.) Griseb., No. 714a-1.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 25, 1934—on *Arctagrostis latifolia,* No. 129a; Polunin Aug. 22, 1936—on *A. latifolia,* Nos. 2268a, 2293a-13.
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20, 1936—on *Dupontia fisheri* R.Br., No. 2242a.

SPHAERIALES

19. **Mycosphaerella lineolata** (Desm.) Schröter, in Cohn's Krypt. Fl. Schles. III, p. 339 (1894).

Sphaerella lineolata (Desm.) Cesati & De Notaris

(Plate XIV, figure D)

Of this species Lind (1934, p. 58) states that it is common in temperate regions, mostly on *Calamagrostis*, but cites other hosts in the Gramineae and in the Cyperaceae. Ellis and Everhart (1892, p. 295) report the species only from Greenland.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 12, 1934—on *Arctagrostis latifolia* (R.Br.) Griseb., No. 714a-2.

20. **Mycosphaerella tassiana** (De Not.) Johanson, Öfv. Kgl. Vet.-Akad. Förhandl., Stockholm, 1884, p. 167 (1884).

M. tassiana is apparently very abundant in arctic and alpine regions, its range extending in the temperate zone southward in the United States to Delaware. Not only is it abundant in the Arctic, but it also grows on an extremely wide range of host plants. Lind (1934, pp. 60 *et seq.*) records it as growing on 110 different host plants, among which he can detect no tendency on the part of the Fungus to form biological races.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 12, 1934—on *Draba alpina* L., *s.l.*, No. 676a-1.

21. **Mycosphaerella salicicola** (Fr.) Lind, Medd. om Grønland, LXXXI, p. 174 (1926).

Sphaerella salicicola (Fr.) Fuckel

The genus *Salix* serves as a host to 16 species of *Mycosphaerella* (Syn. *Sphaerella*[1]), of which four have spores whose dimensions approximate to those of the present specimen, namely 6 x 2μ. The fact that so many species have been described suggests that there must be a considerable synonymy; but as any attempt to straighten out the tangle requires the study of type specimens, I have made no attempt to indicate which are mere synonyms but have instead listed the species below in groups based on the size of the spores. As many of the species have a northern or alpine distribution and may, consequently, be found in the region covered by the present report, it is hoped that this list will be of service to others who may have occasion to study the Mycosphaerellas that occur on boreal species of *Salix.*

Spores 5-9μ long:	
M. salicicola (Fr.) Lind	6 x 2μ
S. punctiformis (Pers.) Rabenh.	6-9 x 2-3·5μ
S. sparsa (Wallr.) Auersw.	7 x 3μ
S. baldense C. Mass.	5-6 x 2-2·5μ
Spores 9-18μ long:	
M. caproni (Sacc.) Lind	15μ long
S. cinerascens Fuckel	9 x 4μ
S. harthensis Auersw.	14 x 3μ, not constricted at septa
S. maculiformis (Pers.) Awd.	14 x (2)-3-4, constricted at septa
S. salicicola var. *amygdalinae* Jaap	9-11 x 3μ
S. salicicola var. *borealis* Karst.	9-12 x 2-4μ
S. salicina Ell. & Ev.	14-18 x 4-6μ

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[1] I.e., *Sphaerella* Ces. & De Not. 1863, *non* Sommerfelt 1824. As this name cannot be used for a genus of Fungi (because of its previous application to a genus of Algae), it is to be hoped that the questions raised by Dr. Linder will soon be settled, that the necessary combinations will be made, and that the continued citation of invalid names (here given as "*S.*" for *Sphaerella*) will be allowed to cease. (N.P.)

Spores more than 20μ long:

S. genuflexa Auersw.	24-30 x 8-9μ
S. grossulariae var. *salicella* Sacc. & Scalia	32-34 x 1·5-2·5μ
S. poralis Karst.	30-35 x 11-18μ

In addition to the above, there are *S. turba* and *S. curvulata*[1] for which no spore dimensions are given. The latter species produces oblong-cuneate spores and may possibly be synonymous with *S. genuflexa*.[1] Of those species in the 5-9μ group, Winter (1887, p. 382) considers *S. salicicola*[1] and *S. sparsa*[1] synonymous with *S. punctiformis*.[1] However, as both *S. punctiformis* and *S. sparsa* were originally described from hosts other than *Salix*, and also as there appears to be a high degree of host specialization in the genus *Mycosphaerella*, it is advisable at this time to maintain *M. salicicola* as a distinct species that may be reduced to synonymy only when it has been proved that there is no specialization of parasitism, and when it has been shown that the conidial stages of the species are identical.

In the manner in which it is considered here, *Mycosphaerella salicicola* is an arctic-alpine species of which the range may perhaps extend southward into the temperate regions at lower elevations. It is possible that when the species is better and more accurately known, both as regards life-history and host-range, it will prove to be of wide distribution. At the present time the records suggest that it is predominantly a boreal form.

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1, 1936—with *Venturia chlorospora* on *Salix herbacea* L., No. 1297b-4.

22. **Stigmatea ranunculi** Fries, Sum. Veg. Scand., p. 421 (1849).

This specimen has been assigned tentatively to the present species because it had not reached the stage of ascospore production when the host was collected. However, because of its resemblance to *Stigmatea robertianum* (a more southern species that parasitizes *Geranium robertianum*), it would seem safe to place it in this genus. Saccardo (1882, p. 542) considers *Sphaerella*[1] *ranunculi* Karsten to be synonymous with *Stigmatea ranunculi* Fr. Lind (1926, p. 166), however, transfers Karsten's species to *Mycosphaerella*, and considers *Sphaerella*[1] *fusispora* Fuckel to be synonymous with this.

Stigmatea ranunculi extends from Alaska eastwards to northern Europe. It appears to be an arctic or possibly arctic-alpine species.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936—on *Ranunculus nivalis* L., No. 2381a-48.

23. **Venturia chlorospora** (Ces.) Karsten, Myc. Fenn. pt. II, p. 189 (1873).

Lind (1934, pp. 72-3) remarks of this Fungus that it is "A common species, from northernmost Greenland to the Alps and Italy." The larger spores separate it from *V. ditricha,* which occurs on the same host.

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1, 1936—with *Mycosphaerella salicicola* (Fr.) Lind on *Salix herbacea* L., No. 1297b-4.

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[1] *See* footnote on previous page. (N.P.)

24. Venturia ditricha (Fr.) Karsten, Myc. Fenn. pt. II, p. 188 (1873).

Lind (1934, p. 73) states that this Fungus is common on species of *Betula* all over Europe and North America, as well as on *Alnus incana*. He also mentions a report of it on *Berberis vulgaris* by Strasser. Apparently it is not a parasitic species, but rather an inhabitant of senescent or dead leaves. However, *Asteroma betulae* Desm., which is said to be the conidial phase of the same species, may be parasitic or weakly so, as is often true of pyrenomycetous forms of which the perfect stage appears to be saprophytic.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—on *Salix herbacea* L., No. 2309a-9.

HYSTERIALES

25. Lophodermina culmigena (Fr.) v. Höhnel, Ann. Myc., XV, p. 313 (1917).

Hysterium culmigenum Fries

Lophodermium arundinaceum f. *culmigenum* (Fr.) Fuckel

This specimen, growing on the culms and sheaths of *Elymus arenarius* L. var. *villosus* E. Meyer, is in excellent fruiting condition, and agrees very well with the description furnished by Rehm (1896, p. 46) and with material in the von Höhnel Herbarium.

It is somewhat difficult to determine the exact geographical range of this species, as it is more than likely that a large proportion of the collections of *L. arundinaceum* (Schrad.) Chev. contain it. However, the species is apparently common in Europe, where it attains high elevations on the mountains. Ellis and Everhart (1892, p. 719) say of it: "On dead culms and sheaths of *Poa compressa, Phleum pratense,* and *Andropogon virginicus,* common around Newfield, N.J., on wheat straw, Ohio (Kellerman); probably not uncommon everywhere." So far as I can determine from the literature and from specimens in the Farlow Herbarium, the present collection is the most northerly representation of the species in the Western Hemisphere.

E. Arctic Occurrence.

8. N. Quebec: *Sugluk,* Polunin July 31, 1936—on *Elymus arenarius* L. var. *villosus* E. Meyer, No. 1481a-1.

HEMISPHAERIALES

26. Asterella chamaenerii Rostrup, Medd. om Grønland, III, pp. 545-6 (1888).

Asterina (Asterella) chamaenerii (Rostr.) Ellis & Everhart

This interesting species, belonging to a group that is predominantly tropical in its distribution, has hitherto been collected only in Greenland. It forms round black spots on the leaves, and more elongate blackened areas on the stems, of *Epilobium (Chamaenerium) latifolium* and *E. angustifolium* (cf. Seymour 1929, pp. 528-9). The present collection, which is immature, represents a considerable westward extension of the hitherto known range.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—on *Epilobium latifolium* L., No. 2590a-6.

PHACIDIALES

27. **Rhytisma salicinum** [Pers.] Fries, Kgl. Sv. Vetensk.-Akad. Handl., XI, p. 104 (1819)[1]; Syst. Myc. II, p. 568 (1823).

This Fungus, which has a fairly general distribution in temperate and arctic regions, occurs also on many different species of *Salix*. Among the specimens listed below, the fruiting stromata may be differentiated into two rather distinct size-groups, viz.: (1) small stromatic forms occurring on *Salix arctophila, S. cordifolia* var. *callicarpaea,* and *S. herbacea;* and (2) medium-sized stromatic forms occurring on *S. arctica* s.l. and *S. reticulata.* There remains a third group of large stromatic forms which are two to three times the diameter of the medium-sized group, and which occur on hosts other than those listed below. The small form on *S. herbacea* often approaches the medium-sized group, but when this happens the greater dimension is due to confluence of the stromata. In addition to differences in stromatic size, there is seemingly a difference in the time of ascospore production. Thus the stromata of *R. salicinum* on *Salix herbacea* at Pangnirtung had on September 19, 1936, only attained the stage of development in which the paraphyses were formed, but in which the asci had barely begun to show in the hymenial layer. On the other hand, the stromata on *S. arctica,* gathered much farther north at Dundas Harbour on September 7 of the same year, had already developed to such an extent that not only asci but even ascospores were matured. A further study with more abundant material collected over a longer period may show that the difference in time of fruition may be explained by the more rapid shortening of the length of day and the earlier onset of cold weather in the more northern station. Excluding differences in time of ripening,[2] and also taking into consideration variations in the size of the host leaves as related to the size of the stromata, there nevertheless appear to be two distinct forms or varieties of *R. salicinum* that can be recognized from this region.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936—on *Salix arctica* Pall., *s.l.,* No. 2498b-2.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936—on *Salix arctica* s.l., No. 2470a-24.
4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 19, 1936—on *Salix cordifolia* Pursh var. *callicarpaea* (Trautv.) Fernald, No. 2611a-36.
5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936—on *Salix* sp. cf. *S. cordifolia,* No. 2309a-14; *Cape Dorset,* Polunin Aug. 25, 1936—on *Salix arctica* s.l., No. 2381a-44; on *S. herbacea* L., No. 2381a-45; on *S. reticulata* L., No. 2381a-42.
7. N. LABRADOR: *Burwell,* Polunin Sept. 25, 1936—on *S. arctophila* Cockerell, No. 2643b-7; on *S. herbacea,* No. 2643b-9.
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19-20, 1936—on *S. arctophila,* No. 2232a-6.

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[1] The "International Rules" (Briquet 1935, p. 4) demand that the nomenclature of "Fungi caeteri" (i.e., all groups except Uredinales, Ustilaginales, and Gasteromycetes) should start only with Elias Fries's "Systema Mycologicum" (1821-32). Accordingly I have, except sometimes where mere synonyms are concerned; taken the liberty of putting square brackets around the names of earlier authors who are validated, as is Persoon in this case, by the typification of the first "legal" author. (N.P.)

[2] It should, however, be remembered that the thickness of the covering and time of melting of the snow in any given spot can greatly affect the date when deciduous plants come into leaf. Unfortunately, the collections cited below have been given new numbers, so I cannot from my notebooks find out their exact habitats. (N.P.)

28. **Cudoniella borealis** *n. sp.*

(Plate XIV, figure B)

Ascoma convex, orbicular or slightly lobate, rather firm, pinkish salmon-coloured, 2·5-4 mm. in diameter, 1-1·5 mm. thick; the stipe cylindrical, straight or curved, glabrous, concolorous (?) with the pileus or lighter coloured, 7-8 x 0·5-1 mm.; asci clavate, not constricted at the apex, (57)-75-86 x 5·5-6·6μ, (4?)-8-spored; ascospores hyaline, subcylindrical, straight or curved, the ends abruptly rounded, (9·5)-10·5-12-(14) x 2μ, uniseptate; paraphyses equal to or slightly exceeding the asci, filiform, septate, up to 81μ long, 1-1·5μ in diameter, the terminal cell cylindrical-inflated to a diameter of 2-2·5μ. Growing on moss.

Ascomate convexo, orbiculari vel leniter lobato, glabri, firmulo, "pinkish-salmon-coloured", 2·5-4 mm. diametro, 1-1·5 mm. altitudine; stipite elongato, recto vel curvulo, glabro, pileo concoloro (?) vel laetiore colorato, 7-8 x 0·5-1 mm.; ascis clavatis, non ad apices constrictis, (57)-78-86 x 5·5-6·6μ, (4?)-8-sporis; ascosporis hyalinis, sub cylindraceis, rectis vel curvulis, extremis abrupte rotundatis, (9·5)-10·5-12-(14) x 2μ, uniseptatis; paraphysibus ascis aequantibus vel superantibus, filiformibus, septatis, usque 81μ longitudine, 1-1·5μ diametro, cellulis terminalibus cylindrico-inflatis usque 2-2·5μ diametro. Hab. in muscis.

For further discussion, *See* under the following species.

Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936, No. 2381a-52, TYPE.

29. **Cudoniella muscorum** *n. sp.*

(Plate XIV, figure A)

Ascoma globose or subglobose, firm and fleshy, light coloured, 2 x 1·5 mm.; stipe elongate, slender, cylindrical or slightly narrowed above, somewhat lighter coloured than the pileus, 12 x 0·5 mm.; asci clavate, the apex somewhat constricted, 69·5-79 x 7·6μ, (6-)-8-spored; ascospores hyaline, fusoid, somewhat curved, 12-15 x 2·5-3·5μ, (0-)-1-septate; paraphyses shorter than or slightly exceeding the asci, up to 83μ long, filiform, septate, 0·5-1μ in diameter, the terminal cell clavate-inflated at the apex to a diameter of 2-2·5μ. Growing on moss.

Ascomate globoso vel subgloboso, ceraceo firmulo, laete colorato, 2 x 1·5 mm.; stipite elongato, recto vel curvulo, teretio vel sursum leniter attenuato, 12 x 0·5 mm.; ascis clavatis nonnihil ad apices constrictis, 69·5-79 x 7·6μ; plerumque octosporis; ascosporis hyalinis, fusoideis, rectis vel curvulis, 12-15 x 2·5-3·5μ, (0-)-1-septatis; paraphysibus ascis brevioribus vel paulo superantibus, usque 83μ longitudine, filiformibus, septatis, 0·5-1μ diametro, cellulis terminalibus ad apices clavato-inflatis ubi 2-2·5μ diametro. Hab. in muscis.

It is impossible to give the exact colour of the fructifications of this species as no field notes were made when the material was fresh. However, from the appearance of the material when preserved in alcohol-glycerine, it would seem that the fructifications were approximately flesh-coloured.

This species may be separated from *C. borealis* by its more or less globose head, by its long slender stipe, and by the constricted apices of its asci. In addition, the terminal cells of the paraphyses are inflated near the apices, whereas in *C. borealis* the entire terminal cell is clavate-inflated (cf. Plate XIV, figures A and B). The fusoid spores also serve to separate this from the preceding species.

The following key, compiled from the literature, is presented in order that *C. borealis* and *C. muscorum* may be distinguished from other members of the genus:

1. Spores more than 20μ long 2
1. Spores less than 20μ long 4
2. Spores 1- rarely 3-septate, fusoid, 25-28 x 4μ; pileus convex, 2-5 mm. in diameter, white or greyish black; stipe 2·5 cm. long, terete; on oak wood........ ....*C. acicularis* (Fr.) Schr. (*C. queletii* (Fr.) Sacc.)
2. Spores 1- becoming 3-septate 3
3. Ascoma up to 15 mm. in diameter, yellowish to ochraceous, convex, becoming repand; stipe 5-7 cm. long; spores 30 x 5μ, 3-septate; on soil.................. ....*C. marcida* (Müll.) Sacc. (*Leotia marcida* (Müll.) Pers.)
3. Ascoma up to 1 mm. in diameter, ochraceous, hemispherical to scutulate; stipe 1 x 0·5 mm., white; spores 25-45 x 5μ, 1-3-septate; on fruit of *Archangelica officinalis* .... *C. fructigena* Rostrup
4. Spores 7-8 x 2μ, non-septate, ovoid-oblong; ascoma-convex then plano-depressed, rufous; stipe white, terete, flexuous, tomentose; on submerged sticks........... ....*C. aquatica* (Lib.) Sacc.
4. Spores larger than 7-8 x 2μ (but less than 20μ long) 5
5. Spores at maturity more than 1-septate 6
5. Spores at maturity 0- to 1-septate 7
6. Spores 17 x 3μ, 0-6-septate; asci 100 x 8μ; paraphyses filiform, branched, globose-inflated (to 2·5μ) at apex; ascoma 2 x 1·5-2 mm., aeruginous; stipe short and stout, in length not exceeding the width of the ascoma; on decayed wood...... ....*C. allenii* A. L. Smith
6. Spores 16-19 x 7-9μ, 3-4-septate; asci 80-88 x 12-14μ; paraphyses filiform; ascoma 0·7 mm. in diameter, "incarnato-rubro"; stipe slender, terete, 0·5-1 mm. long; on moss ....*C. minima* Rostrup & Lind
7. Ascomata globose or subglobose, 2 x 1·5 mm.; ascospores fusoid, straight or curved, 12-15 x 2·5-3·5μ; asci clavate, constricted at the apex, 69·5-79 x 7·6μ; paraphyses filiform, simple, the terminal cell clavate-inflated at the apex; on moss ....*C. muscorum* Linder
7. Ascomata convex; asci clavate, but not constricted at the apex............... 8
8. Spores (9·5)-10·5-12-(14) x 2μ, cylindrical, straight or curved, the ends bluntly rounded; ascoma 2·5-4 mm. in diameter, pinkish salmon-coloured; stipe 7-8 x 0·5-1 mm., terete; on moss ....*C. borealis* Linder
8. Spores 12-14μ long, ellipsoidal; ascomata 4-5 mm. in diameter, "succineo-incarnato"; stipe 10-15 x 1 mm., pallid-ochraceous, olivaceous towards base, sulcate towards apex; on fallen leaves and plant-remains..*C. stagnalis* (Quél.) Sacc.

Of the two species described in the present paper, *C. borealis* alone seems likely to be confused with any of those hitherto described, and that only with *C. stagnalis* (Quél.) Sacc. (*Helotium stagnale* Quél.). However, a comparison with the original figure of Quélet (1883, Pl. VII, fig. 10) shows that the stipe is proportionately longer and more slender, and that the spores are proportionately broader than are those of *C. borealis*. Moreover, the under surface of the ascoma of *C. borealis* is nearly flat or at most plano-concave, whereas in *C. stagnalis*, through the strong recurving of the margin of the hymenium, it becomes more pronouncedly concave.

Occurrence.

7. N. LABRADOR: *Burwell*, Polunin Sept. 25, 1936—on moss, No. 2643b-12, TYPE.

30. **Pseudopeziza drabae** (Nannf.) Nannf., Nova Acta Reg. Soc. Sci. Upsal. ser. 4, VIII, 2, p. 180 (1932).

Pyrenopeziza drabae Nannfeldt

(Plate XIV, figure E)

This species, which was previously known in the fruiting condition only from Norway although sterile material has been recorded from Greenland, is well represented by fruiting specimens in the collections cited below. The leaves and stems of the host are characteristically blackened by the Fungus, the mycelium of which penetrates through the host tissue. The invader seems to follow the contour of the cells of the matrix, and becomes dark brown or almost black and pseudoparenchymatous, thus forming a somewhat loculate and stromatic tissue on the surface of which the apothecia are formed. These apothecia, at first closed and resembling perithecia, soon expand and become discomycetous, as is shown in the photomicrographs of Nannfeldt (1928, p. 136, fig. 3).

The previously known hosts of this species are *Draba alpina* s.l., *D. crassifolia,* and *D. wahlenbergii.*[1] To these may now be added *D. fladnizensis* s.l.[1] and *D. nivalis.*

Although *Pseudopeziza drabae* is so far known only from the Canadian Eastern Arctic, Greenland, and the Scandinavian Peninsula, it seems quite possible that its range may be fully circumboreal.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 30-1, 1934—on *Draba fladnizensis* Wulf., *s.l.,* No. 434a; *Cape Dorset,* Polunin Aug. 28-9, 1934—on *D. fladnizensis* s.l., No. 311a.
9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 25, 1934—on *Draba fladnizensis* s.l. and *D. nivalis* Liljebl., Nos. 108a and 111a, respectively.

31. **Rutstroemia poluninii** (Linder *apud* W. L. White, Lloydia IV, p. 224 (1941).[2]

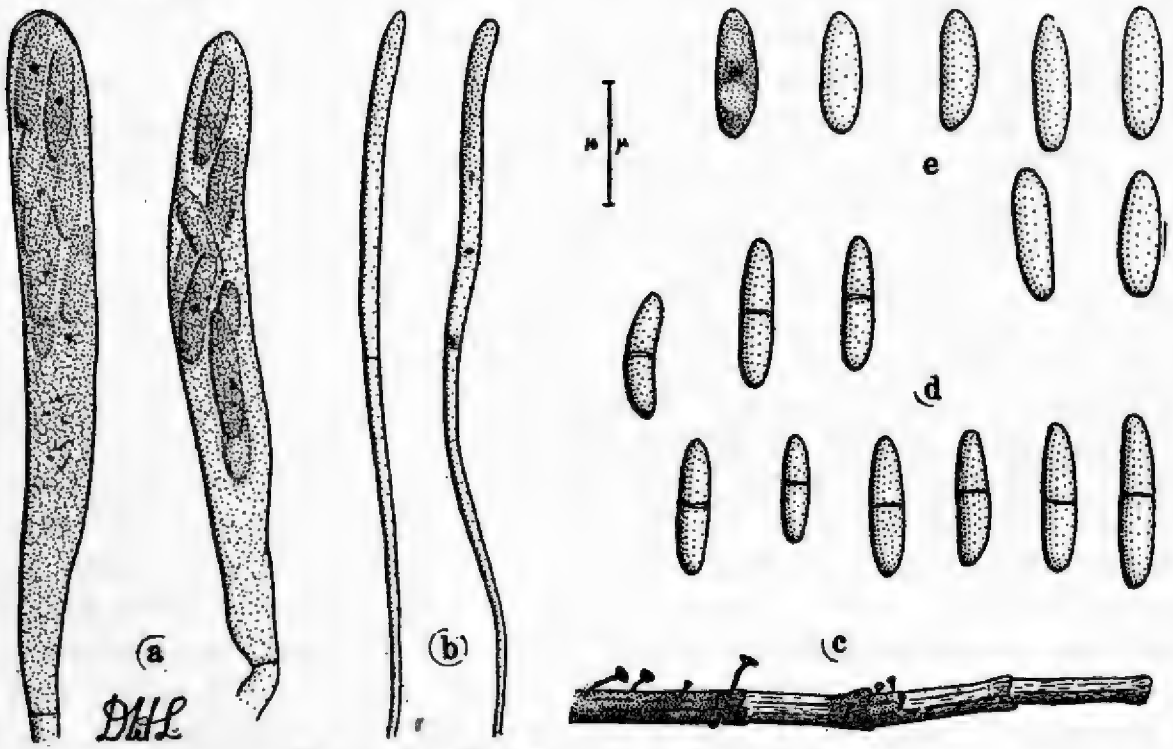

Figure 3. *Rutstroemia poluninii* n. sp.

(*a*) Immature asci with ascospores, showing the only slightly thickened apices of the asci. 1050x. (*b*) Paraphyses that are only slightly enlarged at the outer end and that are hyaline at the base, becoming rather deeply coloured towards the apex. 1050x. (*c*) Habit sketch to show apothecia arising from the discoloured nodal regions of *Equisetum.* 2x. (*d*) Ascospores to illustrate the variation in size and shape. (*e*) Ascospores of *Phialea rhodoleuca* (Fr.) Saccardo for comparison with those of *R. poluninii.* Note that the spores are one-celled and tend to be ellipsoidal or elongate-ellipsoidal, rather than cylindric-ellipsoidal.

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[1] *Draba wahlenbergii* Hartm. is by most modern authors placed as a synonym of *D. fladnizensis* Wulfen ex Jacquin. It is also included in the broad sense in which, owing to excessive variability, this latter has had to be taken in our area—*See* Fernald in *Rhodora,* XXXVI 1934, pp. 286 *et seq.,* and cf. my Botany of the Canadian Eastern Arctic, Part I, p. 237. (N.P.)

[2] Dr. Linder's emendation in proof, though he had drawn up the following description, etc., for publication of this as a new species in the present series. As explained in my Foreword, the long delay in publication, which has caused many inconveniences and some complications, has been due to the recent war. (N.P., October 1946.)

Apothecia stipitate, at first obconical, becoming cupulate and finally flattened above, fawn-coloured, 0·75-1 mm. in diameter, the exciple and hypothecium prosenchymatous and pale brown; stipe concolorous with the pileus, cylindrical or slightly expanded below the apothecium, straight or curved, 2-2·5 mm. long, 0·3-0·5 mm. in diameter, smooth; asci clavate, 8-spored, 63-75 x 7·5μ; ascospores distichous, or occasionally polystichous in the upper part of the ascus, slightly coloured, (10·5)-12·5-13·5-(16·5) x 2·6-3·5μ, subcylindrical to fusoid-elongate; paraphyses simple, filiform, coloured above, 2·0-2·5μ at apex tapering downwards to 1-1·5μ, in length equalling or slightly exceeding the asci. On stems of *Equisetum arvense* L., arising from the blackened nodes.

Apotheciis stipitatis, primum obconicis, deinde cupulatis applanatisque, avellaneis, 0·75-1 mm. in diametro, excipulo et hypothecio prosenchymatico, fuscidulo; stipite apothecio concoloro, cylindrico vel leniter sub apothecio latiore, 2-2·5 mm. longitudine, 0·3-0·5 mm. diametro, laevi; ascis clavatis, octosporis, 63-75 x 7·5μ; ascosporis leniter coloratis, (10·5)-12·5-13·5-(16·5) x 2·6-3·5μ, subcylindraceis vel fusoideo-elongatis; paraphysibus simplicibus, filiformibus, supra fuscidulis, ad apices 2·0-2·5μ diametro, basem 1-1·5μ diametro, ascis aequantibus vel leniter superantibus. Ex nodulis deingratis caudicis *Equiseti arvensis* oriundis.

There is no doubt that this Fungus belongs in the Ciborioideae and is very closely related to *Ciboria,* but from this genus it is separated by the 2 (or very rarely 3)-celled spores, which character would place it in the genus *Rutstroemia* Karsten as emended by Rehm (1896, pp. 763-4). Unfortunately, *Rutstroemia* Karsten has been shown by Honey (1928, pp. 127-57) to be synonymous with *Ciboria,* but in so reducing it he failed to describe or to substitute a genus into which Rehm's species should be placed. However, as intensive monographic studies of the Ciborioideae were being made by the late Professor H. H. Whetzel of Cornell University, it seemed hardly desirable in this paper to erect a new genus to care for our one species. I have, accordingly, placed it in *Rutstroemia* Karsten emend. Rehm, and named it *R. poluninii* in honour of Dr. Nicholas Polunin, who collected the Fungi upon which the present report is based.[1]

Eleven other inoperculate discomycetous Fungi have been described as growing upon species of *Equisetum,* but all except one of these may be excluded from consideration either because the apothecia are sessile or subsessile, or else because of the size of the ascospores. However, the description of *Phialea rhodoleuca* (Fr.) Saccardo (1889, p. 264) at first suggested that the present specimen might belong there, but when Saccardo's species was studied from material in Sydow's Mycotheca Marchica, No. 1266, it was found that the ascospores were uniformly 1-celled and that they measured (8·5)-10-11-(12·5) x 2·6-3·7μ. Macroscopically, also, this Fungus was quite distinct, as even in the dried specimens it could be seen that the apothecia were originally of a much lighter colour than are those of the preserved material of *R. poluninii.*

Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936—No. 1299a-7 (slide No. 2719) TYPE.

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[1] The tenses, etc., hereabouts have been modified in deference to events since this paper was drafted—*See* footnote (²) on previous page. (N.P., October 1946.)

32. **Humarina leucoloma** (Hedw.) Seaver, N. Am. Cup Fungi, p. 129 (1928).

Humaria leucoloma (Hedw.) Boudier

It appears that this Fungus has not previously been collected in the Far North. Seaver (*l.c.*) gives the range as "New York to Delaware and Colorado; also in Europe." In Europe it has been reported from England, France, and Germany. I have been unable to find any reference to its occurrence in either Iceland or Greenland.

E. Arctic Occurrence.

4. C. BAFFIN: *Pangnirtung,* Polunin Sept. 19-20, 1936—No. 2611a-40.

Paxina clypeata [Pers.] *n. comb.*

Peziza ancilis var. *clypeata* Persoon, Myc. Eur. I, p. 219 (1822).

Acetabula clypeata [Pers.] Boudier

In its general macroscopic appearance, its dimensions, and because of the presence of the peculiar hairs on the outer surface of the apothecium, this specimen agrees very closely with that figured as *Acetabula clypeata* by Boudier (1904-10, Pl. 247). However, the spores of our plant measure 18-20 x 12μ, whereas the measurements given by Boudier are 23-25 x 14-15μ. It is possible that the Canadian collection represents another species, but on the other hand it is equally likely that the measurements of Boudier are too large. As *Acetabula* is untenable because of the algal genus *Acetabula* L., this species has to be transferred to *Paxina* O. Kunze.

The present collection seems to fulfil a prophecy of Boudier, who long ago wrote (1887, p. 147), "Bien que trouvée dans la région méditerranéenne, je pense que cette espèce peut se trouver plus au nord, dans les terrains calcaires, mais rarement, puisque Persoon l'a décrite et que ses espèces sont pluôt septentrionales. Je ne l'ai pas encore trouvée dans les environs de Paris." Apparently the species had previously been collected only in France; and although it has not yet been found within the exact area covered by this report, it has been deemed desirable to include the citation of the specimen because, having been found at Port Harrison, there is every reason to expect that it will one day be found slightly farther north.

Subarctic Regions.

Port Harrison, Quebec, Polunin Aug. 6-9, 1936—No. 1569a-44.

33. **Paxina hispida** [Schaeff.][1] Seaver, N. Am. Cup Fungi, p. 205, Pl. XXIV, fig. 1 (1928).

Peziza macropus Persoon

Macropodia macropus [Pers.] Fuckel

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[1] Schaeffer's *Elvela hispida*, on which the present combination is based, was published in 1774. This was before the beginning of legitimate nomenclature in the present group, hence my use of square brackets—cf. Briquet (1935, p. 4) and footnote (1) on p. 252. For similar reasons Dr. Linder has twice placed Persoon's name in square brackets when considering *Paxina calypeata*, and I have done it once in the synonomy of the present species. (N.P., October 1946.)

A more complete list of synonyms may be found in Seaver's work or in that of Rehm (1896, p. 985), but the above are sufficiently representative to ensure the discovery of the species in the literature. It has proved to be not uncommon in temperate North America and in Europe, and probably occurs in Asia. However, so far as I am aware, it has not previously been collected or reported from nearly so far north. A related species, *P. corium* (Weberb.) Seaver, has been reported (as *Macropodia corium* (Weberb.) Sacc.) to be common around Abisko in northern Sweden (cf. Lind 1934, p. 98), in Greenland (cf. Rostrup 1891, p. 606, and 1894, p. 55), and in Iceland (cf. Rostrup 1903, p. 314). The present material cannot be confused with *P. corium* as the spores of this latter species measure 18-20 x 10-12μ, whereas those of *P. hispida* measure 25-30 x 12-14μ. Also, the greyish-tomentose exterior of the apothecium would segregate our plant from *P. corium*.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936—No. 2523a-16. Also:

Subarctic Regions.

Port Harrison, Quebec, Polunin Aug. 6-9, 1936—No. 1569a-45.

34. **Sphaerospora trechispora** (Berk. & Br.) Saccardo, Sylloge Fungorum, VIII, p. 188 (1889).

Peziza trechispora Berkeley & Broome
Lachnea trechispora (Berk. & Br.) Gillet
Peziza asperior Nylander
Leucoloma asperior (Nyl.) Rehm
Ciliaria asperior (Nyl.) Boudier
Ciliaria trechispora (Berk. & Br.) Boudier

This plant, which is bright orange-red and grows among mosses, agrees with the description given by Berkeley and Broome (Ann. Mag. Nat. Hist. XVIII, p. 77, 1846), the ascospores measuring 18-20μ. Seaver (1928, p. 44) states that the ascospores are rather larger, giving the range of variation as 20-26μ. The paraphyses are somewhat clavate-inflated above, and vary from 7·5-10μ in diameter at their apices.

The North American range of this Fungus is given by Seaver (1928, p. 44) as New York to Colorado. In Europe it has been reported from Italy and France, and persists northwards to Finland.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2562b-4.
5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936—No. 2381a-53.

FUNGI IMPERFECTI

35. **Bostrychonema alpestre** Cesati, Erbar. critt. ital. No. 149 (1859).

Dactylium spirale White
Scolecotrichum ungeri Voss

Cylindrospora polygoni Unger
Ramularia bistortae Frank in Leunis
Bostrychonema polygoni Schröt.

The synonymy given above is taken directly from Lindau (1905, p. 381) and seems to be fairly complete. In his description of the species, Lindau says "Konidien akrogen und etwas unterhalb der Spitze auch seitlich ansitzend, ellipsoidisch, zuletzt zweizellig . . .". Saccardo (1886, p. 185) says "conidiis acrogenis (et pleurogenis?)". As I have seen very young spores being borne on the lower half of the spirally twisted conidiophores, as well as acrogenously, there is no doubt in my mind that the species should be considered as one that produces spores acro-pleurogenously. This characteristic, taken in conjunction with others, thus serves to distinguish it from species of *Scolecotrichum, Ramularia,* and *Cylindrospora,* even though it has an evident and close relationship to these three genera.

Bostrychonema alpestre is an arctic-alpine species that probably follows the range of its hosts, *Polygonum viviparum* L. and *P. bistorta* L., on the leaves of which it produces circular, dark brown or purplish-brown spots.

E. Arctic Occurrence.

7. N. LABRADOR: *Burwell,* Polunin July 23-5, 1936—on *Polygonum viviparum* L., No. 1078a-1.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—on *Polygonum viviparum* L., No. 1461a-10; *Cape Smith,* Polunin Aug. 3, 1936—on *P. viviparum,* No. 1299a-5.

36. **Cladosporium bruhnei** *n. nom.*

Hormodendron hordei Bruhne, in Zopf, Beitr. z. Physiol. u. Morphol. nied. Organismen I, 4, pp. 1-42, Pl. I (1894); NON *Cladosporium hordei* Passerini, in Brunaud, Fragments Mycologiques 1884-1885, p. 32 (1887).

(Plate XIV, figure C)

The morphology of the conidiophores of this species and the fact that the spores, which are mostly ellipsoidal and rough-walled, become septate, would immediately indicate that it does not belong in the genus *Hormodendron* but instead in *Cladosporium,* where it closely resembles the type-species, *C. herbarum* Link. The 1-celled or 2-celled ellipsoidal or elongate-ellipsoidal spores usually show one basal scar and from one to three apical scars, thus indicating that the spores are borne in branching chains, as illustrated by Bruhne (*l.c.*). In the present specimen, as in the material described by Bruhne, the 1-celled spores measure 8-10·5 x 4·3-5·2μ and the 2-celled spores up to 13·5 x 5·2μ; hence, it differs from *C. hordei* Passerini, the spore measurements of which are given as 20-25μ long, and also from *C. graminum* Corda, of which the spore size is stated to be 12-27 x 5-8μ.

The species is so far known only from Germany, whence it was first described, and from the Canadian Eastern Arctic. However, it seems probable that it is far more plentiful and widespread than these two records indicate, and that the only reason why more localities are not known is that it has been buried in *C. herbarum*, *C. graminum*, and perhaps yet other species.

E. Arctic Occurrence.

8. N. Quebec: *Sugluk*, Polunin July 31, 1936—on *Elymus arenarius* L. var. *villosus* E. Meyer, No. 1481a-5.

37. **Diplodina pedicularidis** (Fuckel) Lind, Rept. Sci. Results Norweg. Exped. Novaya Zemlya 1921, No. 19, p. 21, Pl. II, fig. 6 (1924).

Lind (1934, p. 121) says of this species, "Its mycelium penetrates the living host-plant. Formerly recorded from Novaya Zemlya, Taimyr (Tranzschel in a private letter), West Greenland 72° and East Greenland (Hold with Hope)." The present collection, then, represents a western extension of the geographic distribution as well as an addition to the host range.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour*, Polunin Aug 27, 1936—on *Pedicularis lanata* Cham. & Schl., No. 2309a-11.

38. **Pestalotia truncata** Léveillé, Ann. Sci. Nat., V, p. 285 (1846).
Pestalozzia truncatula (Corda) Fuckel

This specimen has been determined by Dr. E. F. Guba, to whom I wish to express my thanks for his kindness in examining the material and for his expert opinion.

Pestalotia truncata was originally described from France where it grew on *Populus*, and "*Pestalozzia truncatula*" from Germany where it grew on *Salix*. However, since the making of these two early collections and descriptions, the species has been reported from a number of hosts and over a wide geographic range—but not, so far as I am aware, from as far north as the station from which the present material came.

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset*, Polunin Aug. 25, 1936—on old leaves of fasciated *Salix herbacea* L., No. 2381a-51.

39. **Rhabdospora oxytropidis** Sydow, Hedwigia, XXXVIII, Beibl. 3, p. (143) (1899).

R. oxytropidis was originally described from material collected in Norway on the stems of *Oxytropis lapponica*. The present collection on *O. maydelliana* Trautv. from the Canadian Eastern Arctic is a considerable extension, not only of the geographic but also the host range of the species.

E. Arctic Occurrence.

8. N. Quebec: *Sugluk*, Polunin July 31, 1936—on *Oxytropis maydelliana* Trautv., No. 1553a-2.

BASIDIOMYCETES

UREDINALES

40. **Chrysomyxa empetri** (Pers.) Schröter, Krypt. Fl. Schles. III, 1, p. 372 (1887).

Only the uredinia are present in this material, no telial stage having been observed in any of the sections that were made. As the teleutosporic phase of the life cycle of this rust has only very rarely been encountered, it is to be suspected that this species may be facultatively short-cycled.

Arthur (1934, p. 31) gives the range of the species as "Greenland southward to Maine along the coast, on the higher mountains in New England, and in British Columbia; also in Europe and Japan." I have searched for it in vain on Cape Cod, Massachusetts, near the southern limit of the host. Such a distribution as that recorded by Arthur would indicate that it is a species of arctic-alpine range, but Lind (1934, p. 108) remarks "I am, however, of the opinion that it is too commonly distributed in Denmark and North Germany to be anything but continuous. It may be found far towards the north both in Europe and in America and high up in the mountains viz., the Vosges (Type Locality), Zermatt 2000 m., Ober-Engadin etc.".

E. Arctic Occurrence.

8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936—on *Empetrum nigrum* L. var. *hermaphroditum* (Lange) Sørensen, No. 1299a-2.

41. **Chrysomyxa pyrolae** (DC.) Rostrup, Bot. Centralbl., V, p. 126 (1881).

This species, of which the O,I stages occur on various species of *Picea,* at least in the southern part of its range, has a wide north-temperate and arctic sphere of distribution in its uredinial stage. It has been reported from Alaska, Greenland, and Iceland, and persists southward to Pennsylvania, Ohio, and Nevada in the United States, and to France and Switzerland in Europe. It also occurs in Siberia and Japan. The uredinial stage is often systemic.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26-8, 1936—II on *Pyrola grandiflora* Radius, No. 1170a-24.

42. **Melampsora arctica** Rostrup, Medd. om Grønland, III, p. 535 (1888).
Melampsora alpina Juel

This species chiefly inhabits the boreal regions but it persists southwards in America to the summits of Mount Washington, New Hampshire, and Pikes Peak, Colorado, and in Europe to Germany and Switzerland.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8-11, 1936—II, III on *Salix herbacea* L., No. 2533a-4.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—II on *Salix arctophila* Cockerell, No. 1480a-7.

43. **Melampsora bigelowii** Thümen, Mitth. Forstl. Vers. Oesterr., II, p. 37 (1879).

Melampsora epitea (Kze. & Schum.) Thümen

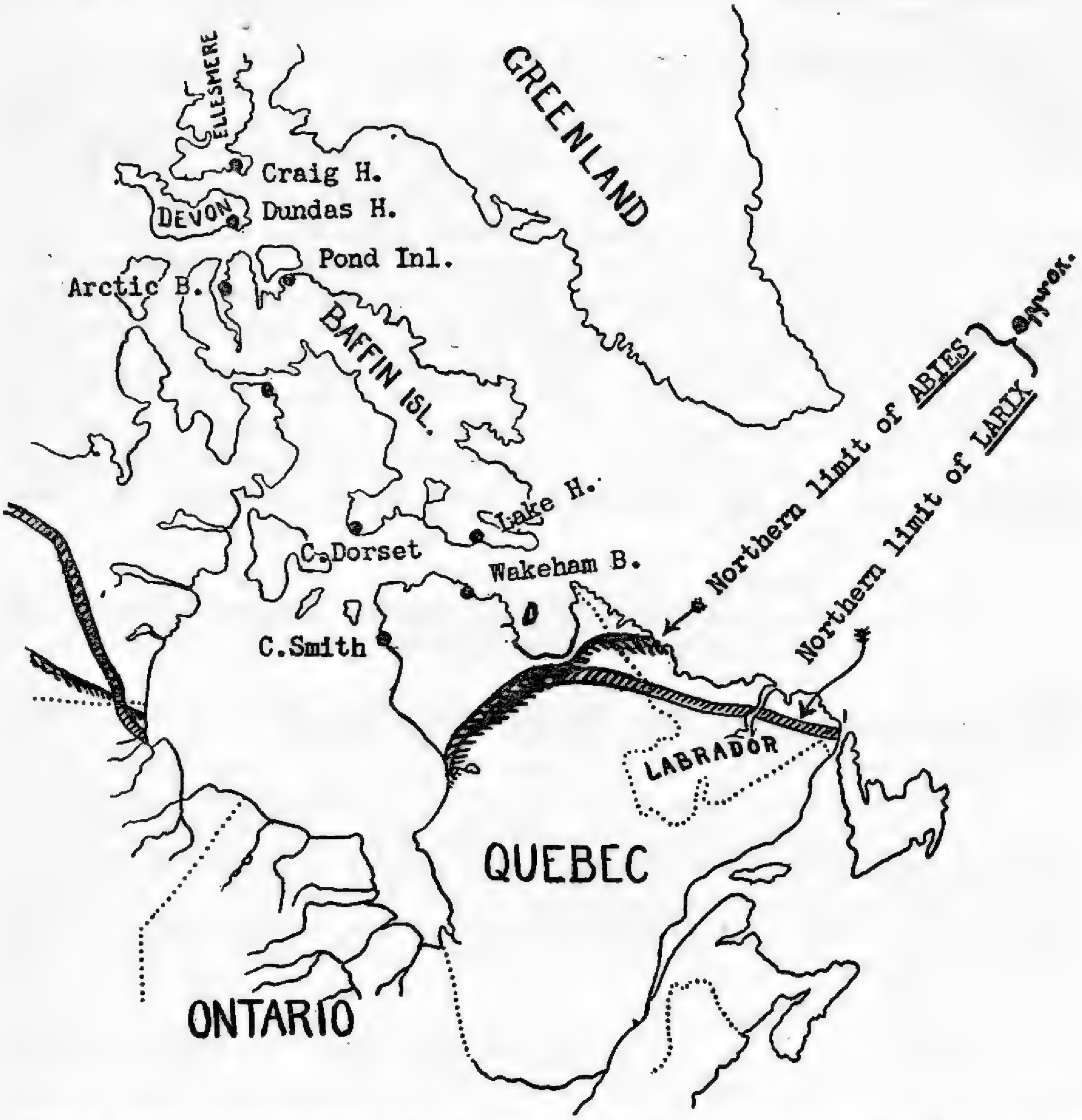

Figure 4. Sketch-map to show the approximate northern limits of *Abies* and of *Larix* in relation to the Canadian Eastern Arctic distribution of *Melampsora bigelowii*. The stations for the rust on *Salix* are indicated by dots. The northern limit of *Ribes* approximates that of *Larix*.[1]

Morphologically, the specimens cited below as belonging to this species agree very closely among themselves and also with the description and measurements given by Arthur (1934, p. 54), who states that the uredospores measure 15-19 x 17-24µ. These large spores generally separate *M. bigelowii* from *M. abieti-caprearum, M. ribesii-purpureae,* and *M. arctica,* even though it must be admitted that there is some overlapping in spore size. Furthermore, these specimens from the Canadian Eastern Arctic were compared with material determined by Arthur, and were found to be identical as to the structure of the sori and the morphology of the paraphyses.

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[1] During recent months I have observed extensively from aircraft as well as on the ground in many places around the limit of tree growth in eastern subarctic Canada and can affirm that the northernmost limits of coniferous tree growth (which are usually attained by *Ribes*) lie in most places somewhat to the north of where Dr. Linder has indicated, and are of mixed *Larix laricina* (Du Roi) Koch and *Picea* (usually P. *mariana* (Mill.) B.S.P. or of this mixed with *P. glauca* (Moench) Voss), whereas *Abies balsamea* (L.) Mill. disappears well to the south—*See* also W. E. D. Halliday "A Forest Classification for Canada", *Ottawa*: Forest Service—Bulletin No. 89, pp. 1-50 and map (1937), and W. E. D. Halliday and A. W. A. Brown, in *Ecology*, XXIV, pp. 358 *et seq.* (1943). (N.P., October 1946.)

Yet in spite of all these morphological resemblances there must remain some doubt concerning the specific epithet here applied, because of the host relations that are so much stressed in the delimitation of the Uredinales. This doubt results from the fact that, of the nine specimens cited below, only the three collected in northern Quebec in the extreme south of our area approach (to as close as about 200 miles) the northernmost limit of *Larix,* which is the alternate host of *M. bigelowii.* Moreover, these stations lie far to the north of the known limits of *Abies balsamea* and the species of *Ribes,* which are the alternate hosts of *M. abieti-caprearum* and *M. ribesii-purpureae,* respectively. There thus remains only *M. arctica* to be considered; but this species, of which the O,I stages occur on the genus *Saxifraga* (which of course grows in plenty far to the north), is readily distinguished from *M. bigelowii* by the shape and dimensions of the uredospores and paraphyses.

It would thus appear, if the morphological characters presented by the uredosori, spores, and paraphyses may be relied upon, that *M. bigelowii* is present at Cape Smith; and it is possible without too great an exercise of the imagination to postulate that in other more northerly stations the infections may have arisen in part from wind-borne aeciospores coming from the south. For the far northern stations on Baffin, Devon, and Ellesmere Islands it would be necessary to imagine that once the *Salix* has become infected, whether by immigration of aeciospores or of uredospores, the Fungus has been able to perpetuate itself by repetition of the uredosporic stage or else by systemic infections—at least without the intervention of the alternate host. Thus, unless *M. bigelowii* is, as Jørstad implies (1934, pp. 48-54), a composite species, we have another example of a rust that in arctic or alpine habitats has shortened its life-cycle. Jørstad (1934, pp. 48 *et seq.*) also points out the possibility that *M. bigelowii* is a composite species which includes one variety or race that in the Far North alternates between *Salix* and *Saxifraga* instead of between *Salix* and *Larix.* The solution of this problem must remain for subsequent investigators to solve by means of additional collections, field notes, and experiments.

The species is very widespread in temperate and subarctic regions.

E. Arctic Occurrence.

1. ELLESMERE: *Craig Harbour,* Polunin Sept. 5-6, 1936—II and III on *Salix arctica* Pall., *s.l.*, No. 2476a-4.
2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936—III on *Salix arctica* s.l., No. 2523a-15.
3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936—II on *Salix arctica* s.l., No. 2472a-1; *Arctic Bay,* Polunin Sept. 8-11, 1936—II and III on *S. arctica* s.l., No. 2562b-3.
5. S. BAFFIN: *Lake Harbour,* Polunin July 26-8, 1936—II on *Salix arctica* s.l., No. 1170a-26; *Cape Dorset,* Polunin Aug. 25, 1936—II on *S. arctica* s.l., No. 2381a-50.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—II on *Salix reticulata* L., No. 1461a-12; II on *S. arctica* s.l., No. 1471b-4; *Cape Smith,* Polunin Aug. 3, 1936—II on *Salix* sp.

44. **Melampsora vernalis** Niessl., in Winter, Rabenhorst's Krypt.-Fl., I, p. 237 (1881).

This name is applied with some hesitancy because according to the Sydows (1912-5, pp. 386-8) the uredo stage of the species is not known with certainty. They cite Voglino's account of this stage as follows: "Soris uredosporis minutissimis, epiphyllis, rotundatis; uredosporis ellipticis, 16-20 x 15, aurantiacis, aculeolatis; . . . ." and state that it occurred on *Saxifraga aizoides* L., whereas *M. vernalis* had, previously to Voglino's account (1896), been known to occur only on *S. granulata* L. The uredospores of this specimen from Wakeham Bay are sub-globose to broadly ellipsoid and measure (15)-16·5-22·5 x (15)-16·5-18-(22)µ; the contents are orange coloured, and the wall is hyaline and finely echinulate. Among the spores lie the relatively short, inner paraphyses. These are 1-celled for the most part, thin-walled, clavate or rounded-inflated at the apex, and lack the strong narrowing of the basal part that was seen in *M. bigelowii*; and they are up to 37·5µ long. Bordering the sorus are the marginal paraphyses, which measure 37·5-52·5 x 16·5-22·5µ. Finally, the uredosorus is epiphyllous, which character is in agreement with Voglino's description (1896, p. 39). Subcuticular pycnidia with pycnospores were present among the uredosori. The only other species of *Melampsora* occurring on *Saxifraga* in the II, III stage is *M. hirculi* Lindr., which produces hypophyllous uredosori.

If it be assumed that Voglino's specimen belongs in this species, then it has been reported from Germany, Austria, Great Britain, Denmark, Sweden, and Finland on *Saxifraga granulata,* and from Italy on *S. aizoides.* The present collection represents the first record from North America, and the host, *Saxifraga cernua,* is also new for this species.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936—O, II on *Saxifraga cernua* L., No. 1471a-4.

45. **Puccinia bistortae** (Str.) De Candolle, Fl. France VI, p. 61 (1815).

Puccinia bistortae is an arctic-alpine rust which, to quote Arthur (1934, p. 280), occurs in "Cool habitats and mountain summits from the Arctic Circle to the White Mountains in New Hampshire, and from southeastern Alaska southward to southern California and New Mexico; also in Europe, eastern Asia, and Japan."

All the specimens listed below occur on *Polygonum viviparum* L., and are in either the uredinial or the telial stage, with the exception of No. 1481a-3 from Sugluk, in which material both stages are present together.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin July 26-8, 1936—No. 1170a-25.
7. N. Labrador: *Burwell,* Polunin July 23-5, 1936—No. 1079a-2.
8. N. Quebec: *Sugluk,* Polunin July 31, 1936—No. 1481a-3; *Wolstenholme,* Polunin Aug. 1, 1936—No. 1297b-2; *Cape Smith,* Polunin Aug. 3, 1936—No. 1299a-4.

46. **Puccinia drabae** Rudolphi, Linnaea, IV, p. 115 (1829).

P. drabae appears to be predominantly an arctic-alpine species, the range in the Western Hemisphere being from Alaska to Greenland southwards to northern Utah and southeastern Quebec. In the Eastern Hemisphere it occurs in the Scandinavian Peninsula, Germany, Austria, Switzerland, Italy, Hungary, and Asia Minor. All specimens in the following list are in the teleutosporic stage and are parasitic on *Draba glabella* Pursh.

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin Aug. 27, 1936—No. 2309a-10.
8. N. QUEBEC: *Cape Smith,* Polunin Aug. 3, 1936—No. 1299a-3.
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19-20, 1936—No. 2246a-17.

47. **Puccinia eutremae** Liro, Acta Soc. pro F. Fl. Fennica, XXII, 3, p. 9 (1902).

This rust, if made to include *Puccinia cochleariae* Liro in the manner advocated by Arthur (1934, p. 291), is an arctic-alpine species that has been previously reported from northern Europe, the French Pyrenees, and West Greenland. Accordingly, even if it has not been collected before on the North American continent, its occurrence at two points in the region covered by the present report is not to be wondered at.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936—III on *Eutrema edwardsii* R.Br., No. 2381a-39.
8. N. QUEBEC: *Sugluk,* Polunin July 31, 1936—III on *Eutrema edwardsii,* No. 1481a-4.

48. **Puccinia ranunculi** Blytt, Forhandl. Vid. Selsk. Christiania 1882, p. 12 (1882); NON *P. ranunculi* Seymour, Bot. Gaz., IX, p. 191 (1884).

Puccinia blyttiana Lagerheim

Puccinia nutallii Ellis & Everhart

P. ranunculi Blytt is distinguished from *P. andina* Diet. & Neg. (*P. ranunculi* Seymour) by the tubercular ornamentation of the teleutospore walls. Arthur (1934, p. 288) reports the species as occurring on *Cyrtorhyncha neglecta, C. ranunculina, Ranunculus eschscholtzii, R. glaberrimus, R. stenolobus, R. subsagittatus,* and *R. suksdorfii.* To this list of hosts may be added from the Sydows' work (1902-4, pp. 548-9) *Ranunculus auricomus* and *R. alpestris.* Rostrup (1903, p. 290) also reports the species, as *Micropuccinia blyttiana* (Lagerh.) Rostrup, on *Ranunculus acer.*

This is an arctic-alpine species, found from Colorado and Arizona northwards to Alaska, and again in Iceland, Scandinavia, and Switzerland. Although I have as yet found no record of its occurrence in Greenland, it ought surely to be found there. The two collections listed below constitute the first record of this Fungus in northeastern America where it grows on a new host, *Ranunculus pedatifidus* Sm. var. *leiocarpus* (Trautv.) Fernald (*R. affinis* R.Br., *R. arcticus* Richardson).

E. Arctic Occurrence.

5. S. BAFFIN: *Lake Harbour,* Polunin July 27, 1936—No. 1258a-4.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—No. 1480c-12.

49. Puccinia ustalis Berkeley, Hooker's Jour. Botany and Kew Garden Miscellany, VI, p. 207 (1854).

var. **pulsatillae** (Kalchbr.) *n. comb.*

Puccinia pulsatillae Kalchbrenner, Mathem. Termeszett. Közlem., III, p. 307 (1865).

(Plate XVI, figures A-B)

As has been indicated by Jørstad (1934, pp. 116-7), the classification of the microcyclic paraphysate species of *Puccinia* that occur on the Ranunculaceae is rather puzzling, partly because we know little of the host range of the species involved, and partly because of the unfortunate overlapping of spore dimensions. In order to compare the species in respect to spore size, host range, and geographical distribution, I have compiled the following data from the Sydows' work (1902-4, p. 536), with additional information from Arthur's book (1934, p. 184) indicated by an asterisk after the host name.

Species	Spore size	Distribution	Hosts
P. pulsatillae	42-92 x 12-24	N. America; Europe; Asia[1]	*Anemone alpina, A. drummondii*, A. montana, A. nigricans, A. parviflora*, A. patens* var. *nuttalliana, A. pratensis, A. pulsatilla, A. silvestris, A. sulphurea, A. tetrasepala*[1], *Aconitum moschatum*[1], *Clematis lasiantha*; Pulsatilla ludoviciana*, Trautvetteria grandis**
P. melasmoides	45-75 x 12-16	Asia	*Aquilegia*
P. rhytismoides	33-68 x 7-15	N. Europe	*Thalictrum alpinum*
P. trautvetteriae	40-56 x 11-16	N. America	*Trautvetteria grandis*
P. ustalis	44-60 x 10-16	Asia	*Ranunculus hirtellus, R. pulchellus, R. songaricus*

From the table it can be seen that *P. ustalis* is the only member of this group that has heretofore been reported on species of *Ranunculus*, yet the specimens found growing in the Canadian Eastern Arctic on *Ranunculus pedatifidus* var. *leiocarpus* have to be placed in *P. pulsatillae* instead of in *P. ustalis* because the spores measure 60-82·5 x (7·5)-10·5-15μ. As these spore measurements overlap those of all the other species in either length or width, and as the differences in size may, moreover, be the result merely of different degrees of maturity of the teleutospores, Jørstad's suggestion (1934, p. 117) that "It might well be justifiable to unite all these stromatic ranunculaceous micro-forms under one and the same collective species" has its merits and should, until there is evidence to the contrary, be followed. At the same time it should be recognized that there may be definite varieties that are distinguishable either morphologically or physiologically. Accordingly, as *Puccinia ustalis* Berkeley (1854) has priority over the other species listed, *P. pulsatillae* is reduced to varietal rank under it, and includes all members of the group that have large spores.

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[1] Cf. Arthur and Cummins (1933, p. 404).

This variety is of arctic-alpine distribution, being found in North America, Europe, and Asia.

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 25, 1934—on *Ranunculus pedatifidus* Sm. var. *leiocarpus* (Trautv.) Fernald, No. 123a-1.
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20, 1936—on *Ranunculus pedatifidus* var. *leiocarpus,* No. 2246a-14.

50. **Puccinia variabilis** Greville, Scot. Crypt. Fl., Pl. LXXV (1823).

This species is separated from *P. hieracii* (Schum.) Mart. (*P. taraxaci* Plowr.) by the smaller average size of the teleutospores and by the fact that the pedicle is often obliquely attached. In the specimen at hand, the spores are not only obliquely attached, but occasionally the pedicle is to be found at or very close to the middle septum. Mesospores are also present.

P. and H. Sydow (1902-4, p. 164) give the range of this species as Great Britain (Scotland) and Sweden, and to this Arthur (1934, p. 350) adds that it has been sparingly introduced into Nova Scotia. The present specimen from Chesterfield[1] throws considerable doubt on Arthur's assertion, and suggests that possibly the species is arctic or subarctic and that the Nova Scotia specimen represents the southern limit of its range.

E. Arctic Occurrence.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20, 1936—III and mesospores on *Taraxacum lacerum* Greene, No. 2246a-13.

51. **Uromyces lapponicus** Lagerheim, Bot. Notiser Lund, p. 274 (1890).

The aecidial stage, which is systemic and perennial within the host, is the only one that is represented in the collections listed below. Heretofore this species has been reported as parasitic on *Astragalus alpinus, A. australis, A. flexuosus, A. frigidus, A. macounii,* and *Oxytropis albiflora*—hence its occurrences on *Oxytropis maydelliana* Trautv. and *O. terrae-novae* Fernald constitute new host records.

The range of *Uromyces lapponicus* as given by Arthur (1934, p. 302) is "Arctic Circle, southward to Colorado and Oregon; also in Europe and Asia." Lind (1934, p. 99) states that the species in recorded in Norway south to Dovre (61 degrees), in Sweden south to Jemtland, and in Finland south to 66 degrees; it is found again in the Austrian Alps and in Switzerland.

E. Arctic Occurrence.

8. N. Quebec: *Sugluk,* Polunin July 31, 1936—on *Oxytropis maydelliana* Trautv., Nos. 1481a-2 1533a-1.

Also:

Subarctic Regions.

Port Harrison, Quebec, Polunin Aug. 6-9, 1936—on *Oxytropis terrae-novae* Fernald, Nos. 1569a-43 1674a-1.

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[1] Where it grew on the usual native *Taraxacum lacerum* Greene, and where there are, so far as is known, no introduced phanerogams. (N.P.)

52. Cintractia caricis (Pers.) Magnus, Abh. Bot. Ver. Prov. Brandenb., XXXVII, p. 78 (1896).

This smut shows such a wide range of variation in the size of the spores that it seems best to err on the side of conservatism and include in it all of the collections that are listed below as *C. caricis*, especially in view of the facts that all the specimens show a pronounced columella, and that the spores do not have a conspicuous hyaline outer membrane—characters that if present would demand the placing of the specimens in *Cintractia externa* (Griff.) Clinton. Although it is quite possible that, by the application of culture studies and biometrics, this species may be broken down into varieties or races that can be correlated with the genera or subgenera of its hosts, it may be of interest to point out here that at Lake Harbour in S. Baffin *C. caricis* in the present (aggregate) sense has, during a few August days, been collected on the following five different hosts: *Carex glacialis, C. misandra, C. nardina, C. rupestris,* and *Kobresia simpliciuscula.* These observations would tend to indicate that, under natural conditions, these rather different plants are susceptible to attacks of the one smut. In distribution this latter is almost cosmopolitan.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 12, 1934—on *Kobresia myosuroides* (Vill.) Fiori & Paol.,[1] No. 680a-1; *Arctic Bay,* Polunin Sept. 8-11, 1936—on *Kobresia myosuroides* and *Carex rupestris* All., Nos. 2533a-5 and 2562b-2, respectively.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 3-5, 1934—on *Carex bigelowii* Torrey, No. 537a-1; Polunin Sept. 19-20, 1936—on *Kobresia myosuroides* and *Carex bigelowii,* Nos. 2611a-35 and 2611a-36, respectively.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 30-1, 1934—on *Carex misandra* R. Br., *C. nardina* Fr. and *C. rupestris,* Nos. 425a-1, 426a-1, and *no number,* respectively; Polunin Aug. 27, 1936—on *Carex glacialis* Mackenzie, *Kobresia simpliciuscula* (Wahlenb.) Mackenzie, and *Carex rupestris,* Nos. 2309a-8, 2309a-12, and 2309a-13, respectively; *Cape Dorset,* Polunin Aug. 28-9, 1934—on *Carex bipartita* All. and *C. bipartita* var. *amphigena* (Fernald) Polunin, Nos. (none assigned) and 278a-1, respectively.

7. N. Labrador: *Burwell,* Polunin Sept. 25, 1936—on *Carex bipartita* and *C. rupestris,* Nos. 2643b-11 and 2643b-10, respectively.

8. N. Quebec: *Diana Bay,* Aug. 10, 1936—on *Carex bipartita,* leg. C. H. Ney and Joe Courtright, No. 2368a-1.

9. Islands in Hudson, etc., Bays: *Southampton Island* (South Bay), Polunin Aug. 25, 1934—on *Carex rupestris* and *Kobresia simpliciuscula,* Nos. 108a-1 and 133a-1, respectively; Polunin Aug. 22, 1936—on *Kobresia simpliciuscula,* No. 2293a-14.

10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20—on *Carex bigelowii, C. physocarpa* Presl, *C. scirpoidea* Michx., and *Carex* sp. sect. *Rotundatae,* Nos. 2246a-17, 2113a-1, 2218a-3, and 2246a-18, respectively. Also:

Subarctic Regions.

Churchill, Manitoba, Polunin Aug. 15-20, 1934—on *Carex gynocrates* Wormskj., No. 7a-1; Aug. 13-16, 1936—on *Carex aquatilis* Wahlenb., No. 2081-1.

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[1] Based on *Carex myosuroides* Villars, Prosp. Hist. Pl. Dauph., p. 17 (1779); Hist. Pl. Dauph. II, p. 194 (1787), whereas *Kobresia bellardi* (All.) Degland apud Loisel., the combination used in Part I (p. 106), is based on a later specific epithet and consequently illegal. (N.P., October 1946).

53. [1]**Cintractia luzulae** (Sacc.) Clinton, Jour. Mycology, VIII, p. 143 (1902).

Ustilago luzulae Sacc.

This fungus was found growing on plants of *Luzula confusa* Lindeb., which had remained so stunted that I at first set them aside as belonging to some other, possibly undescribed, species (cf. Botany of the Canadian Eastern Arctic, Part I). Only much later, in Europe, did I discover that the gynoecium had been destroyed by a smut, which presumably accounted for the stunting and deformation. It was then too late to send the material to Dr. Linder for inclusion in his report.[1] Like the last species, *Cintractia luzulae* is of widespread occurrence in the Northern Hemisphere and has already been recorded from the arctic and subarctic regions on numerous occasions.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 3-5, 1934—(B) on *Luzula confusa* Lindeb., No. 501.

54. **Schizonella melanogramma** (DC.) Schröter, Cohn's Beitr. Biol. Pflanz., II, p. 362 (1877).

Geminella melanogramma (DC.) Magnus

(Plate XVIII, figure A)

This is a very characteristic smut, the 2-celled spores of which, although much darker, remind one strongly of the spores of species of *Puccinia.* The resemblance is strengthened by the distribution of the sori in lines along the leaves of the host. Lind (1934, p. 113) reports this species as occurring on *Carex bigelowii* (sub nom. *Carex rigida*) and *C. vaginata* in the arctic regions,[2] but so far as I am aware the specimen cited below is the first to be reported on *Carex rupestris.*

Schizonella melanogramma is widely distributed in North America, Europe, and South America. In North America it is reported as far south as Connecticut, Illinois, and Iowa, the remaining stations being to the north and at higher elevations. Lind (1934, pp. 113-4) says of the geographical range of the species that "with regard to its geographical distribution it is rather arctic-alpine, that is to say, it may be found in many arctic regions, e.g. Scandinavia, Spitsbergen, Herschell Island, and it may be found in the high mountains also, e.g. Riesengebirge, Tyrol 2450 m., Mähren, Krain, Jura, Istria and Caucasus, just as it is found in America in the Rocky Mountains (Wisconsin and Indiana very common) even in South America. But it is not entirely absent in the lowlands, in Norway it is collected as far south as Oslo 60°, in Sweden it is found in Gotland 57°, it has never been observed in Denmark but immediately south of Denmark on the Island Romø in the North Sea and on the Island Oesel in the Baltic 58° as well as in Brandenburg. *Sch. melanogramma,* in other words, stands halfway between the arctic alpine spec. and the ubiquitous species."

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[1] I have taken the liberty of inserting this species in the present flora. The determination was kindly checked by Miss F. L. Stephens of the British Museum, but for the words concerning it I must bear all responsibility. (N.P.)

[2] Actually these specimens, as is the case with many of those that come loosely to be cited from "the Arctic", were gathered in northern Scandinavia, where the climate, in spite of the relatively high latitude, is really subarctic in type and allows of the growth of trees and many 'southern' plants. (N.P.)

Aside from the fact that Wisconsin and Indiana are not in the Rocky Mountains, Lind's final sentence appears to summarize the situation quite satisfactorily.

E. Arctic Occurrence.

8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—on *Carex rupestris* All., No. 1461a-11.

55. **Ustilago inflorescentiae** (Trel.) Maire, in Brockman-Jerosch & R. Maire, Oesterr. Bot. Zeitschr., LVII, p. 273 (1907).

Ustilago bistortarum (DC.) Körn. var. *inflorescentiae* Trelease
Sphacelotheca polygoni-vivipari Schellenberg

(Plate XVII, figures A-B)

I have adopted this name because *Ustilago bistortarum* (DC.) Körn. has been reported to grow only on the leaves of *Polygonum viviparum* L., whereas the present plant occurs in the inflorescence and bulbils. Field observations by Schellenberg (1907, p. 385-95) showed that plants with infected bulbils did not bear infected leaves, and herbarium specimens support his statement. Because of this specialization on the different host structures, it seems best, at least for the time being, to recognize this species. On the other hand *Sphacelotheca polygoni-vivipari,* which is Schellenberg's designation of the plant inhabiting the bulbils, appears from present evidence to be superfluous, as the Fungus membrane that should surround the sori of members of the genus is lacking, being represented only by host cells. Similarly, the columella that is present within the sorus is not of fungal hyphae, but is made up of remnants of the vascular bundles. Furthermore it would seem that, biologically speaking, the bulbils could well be considered a part of the inflorescence. At any rate there is a greater difference in size between the spores from different inflorescences than there is between the spores from bulbils and from flowers. The evidence, therefore, points to the identity of *Sphacelotheca polygoni-vivipari* with *Ustilago inflorescentiae,* and it is almost equally probable that when more is known of the rôles that the age of the host and the external environmental factors play in localizing infections, it will be necessary also to relegate *U. inflorescentiae* to synonymy or else to the varietal rank assigned to it by Trelease (in Saccardo, Peck and Trelease 1904, p. 35).

In describing *Ustilago bistortarum* var. *inflorescentiae,* Trelease (*l.c.*) states that the spores were smooth. Through the kindness of Dr. C. W. Dodge, of the Missouri Botanical Garden, I have been able to restudy the type material. As is shown by the photomicrographs in Plate XVII, figure B, the spores are just as pronouncedly ornamented as the specimens here placed in the present species; they are also ornamented to the same degree as are the spores of *U. bistortarum.*

Ustilago inflorescentiae is widespread in arctic-alpine regions of the Northern Hemisphere.

E. Arctic Occurrence.

5. S. BAFFIN: *Cape Dorset,* Polunin Aug. 25, 1936—on *Polygonum viviparum* L., No. 2381a-49.
7. N. LABRADOR: *Burwell,* Polunin July 23-5, Aug. 30, and Sept. 25, 1936—in inflorescences of *Polygonum viviparum,* Nos. 1079a-1, 2446a-4, and 2643b-6, respectively.
8. N. QUEBEC: *Wakeham Bay,* Polunin July 29-30, 1936—in inflorescence of *Polygonum viviparum,* No. 1480a-5; *Cape Smith,* Polunin Aug. 3, 1936—in bulbils of *P. viviparum,* No. 1299a-1.

56. Ustilago vinosa (Berk.) Tulasne, Ann. Sci. Nat. Bot. sér. 3, VII, p. 96 (1847).

This is a common arctic species that is also found in alpine situations as far south as the Alps in Europe, and Washington, Wyoming, and California in America (cf. Clinton 1904, p. 376).

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936—on *Oxyria digyna* (L.) Hill, No. 2470a-25.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936—on *Oxyria digyna,* No. 2381a-40.

7. N. Labrador: *Burwell,* Polunin July 24, 1936—on *Oxyria digyna,* No. 1110a-2.

POLYPORALES

57. Exobasidium angustisporum *n. sp.*

(Plate XVIII, figure B; text figure 5)

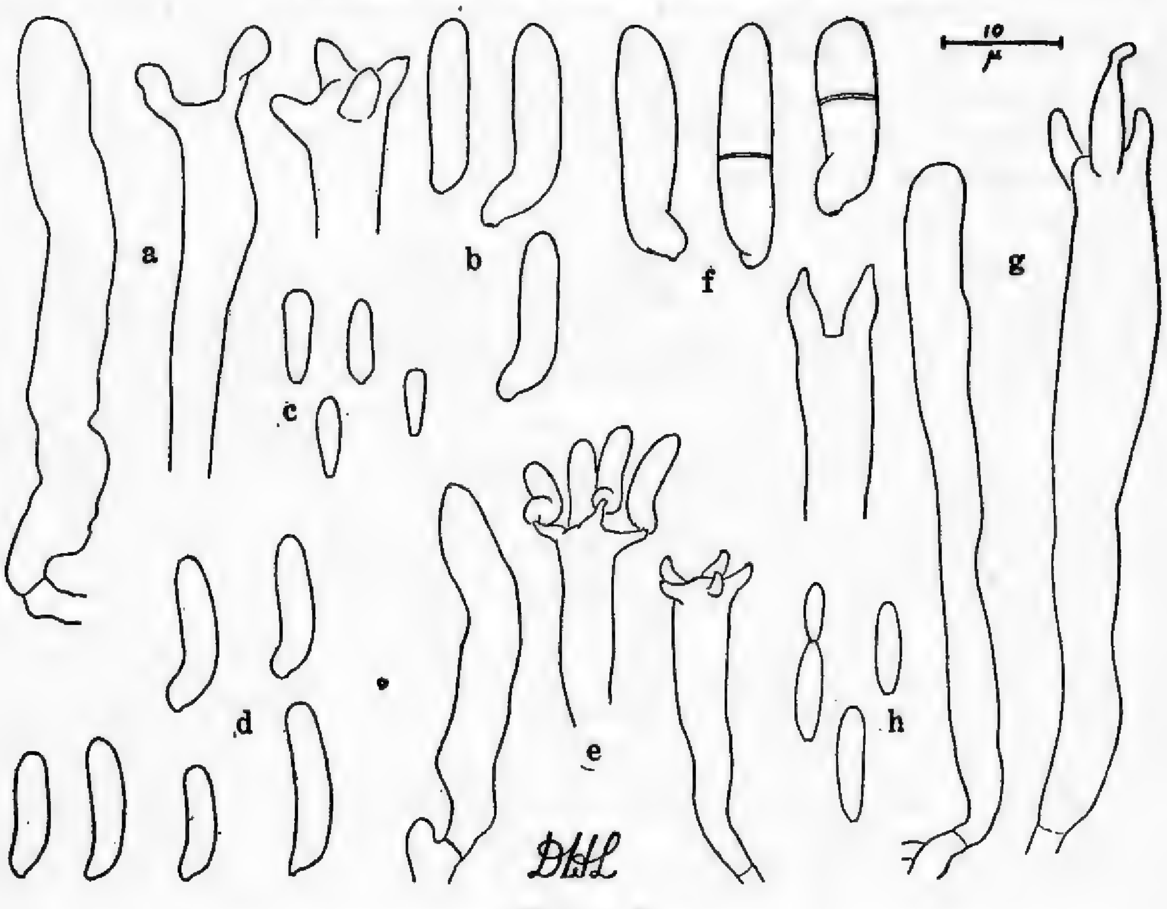

Figure 5

(a-c) *Exobasidium uvae-ursi* (Maire) Juel. (a) Immature basidia and two mature, discharged basidia that are 2- and 4-sterigmate, the sterigmata relatively stout. (b) Three basidiospores that are one-celled even though discharged from the basidium. (c) Conidia that tend to be cuneate in outline. From authentic material *ex herb.* Maire. 1050x.

(d-e) *Exobasidium angustisporum* Linder *n. sp.* (*d*) Six elongate or cylindric-ellipsoid spores that remain non-septate even though discharged from the basidia. (e) An immature basidium and two mature basidia, the latter 4- to 5-sterigmate, the sterigmata nearly at right angles to the long axis of the basidia, tapering, and with upturned ends. From type material. 1050x.

(f-h) *Exobasidium arctostaphyli* Harkness. (f) Three basidiospores that at maturity soon become septate, and are somewhat stouter than are those of *E. uvae-ursi.* (g) The basidia, which are very elongate and usually 2- to 3-sterigmate. The sterigmata are conspicuously longer and more tapering than are those of *E. uvae-ursi,* and considerably larger than those of *E. angustisporum.* (h) Conidia that instead of being cuneate are elongate-ellipsoidal, and of which one bears a secondary conidium. From authentic material on *Arctostaphylos pungens* from Harkness. 1050x.

Mycelium systemic in young shoots, causing a rapid growth, and also an enlargement of the foliar parts, the leaves on their upper surfaces becoming wax-like and deep red, and having on their lower surfaces a whitish bloom from the basidia and spores; the basidia clavate-elongate, 45-52·5 x 3·5-6μ, tapering to 1·5-2μ at the base, (3-)-4-6-sterigmate, the sterigmata spreading almost at right angles to the long axis of the basidium, 1·5-2μ long, tapering, and upturned near the ends; basidiospores smooth, hyaline, elongate-ellipsoidal to cylindrical, unilaterally curved or strongly curved near the base, obliquely apiculate, (7·5)-10·5-11·5 x 2·5-3·5μ, non-septate, or very rarely 1-septate at germination. In leaves of *Arctostaphylos alpina* (L.) Spreng.

Mycelium in surculis et foliis hospitis crescens, incrementum rapidum et amplificationem foliorum efficiens, foliis supra ceraceo-rubescentibus, infra basidiis sporisque albescentibus; basidiis clavato-elongatis, 45-52·5 x 3·5-6μ, and basem fastigatis et 1·5-2μ diametro, (3-)-4-6-sterigmatibus, sterigmatibus late extensis, 1·5-2μ longitudine, fastigatis; basidiosporis laevibus, hyalinis, elongato-ellipsoideis vel cylindraceis, unilateraliter curvatis vel basem forte curvatis, obliquiter apiculatis, (7·5)-10·5-11·5 x 2·5-3·5μ, non-septatis vel rarissime septatis. Hab. in surculis foliisque *Arctostaphylis alpinae* (L.) Spreng.

This species is closely related to *E. vaccinii* (Fuckel) Woronin var. *myrtilli* (Fuckel) Juel, as is indicated by the number and orientation of the sterigmata and by the shape of the spores. From this variety, however, it differs in that the spores are extremely seldom septate, whereas in *E. vaccinii* var. *myrtilli* the spores become septate even while attached to the sterigmata. From the two other species of *Exobasidium* that grow on *Arctostaphylos*, viz., *E. uvae-ursi* (Maire) Juel and *E. arctostaphyli* Harkness, the present species may readily be distinguished by its smaller basidia, its more numerous, slender sterigmata, and its smaller and more slender spores—*See* Figure 5. All three species agree in the symptoms produced in the host, for they cause a rapid growth of the young shoots and make the leaves enlarge to varying degrees. These infected leaves at the same time take on a waxy appearance and become deep red in colour.

In distribution the species probably follows the range of its host; indeed it is possible that it passes under the name *E. vaccinii* var. *myrtilli* or even *E. vaccinii* in European lists that record these Fungi on *Arctostaphylos alpina.*

E. Arctic Occurrence.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1, 1936—No. 1297a-8.
10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19-20, 1936—No. 2232a-6.

58. **Exobasidium vaccinii** (Fuckel) Woronin, Nat. Ges. z. Freiburg i. B., IV; 4, p. 257 (1867).

var. **myrtilli** (Fuckel) Juel, Sv. Bot. Tidskr., VI, 3, pp. 364-5, fig. B, Pl. VII, fig. 3 (1912).

Fusidium vaccinii (Fuckel) Woronin var. *vaccinii-myrtilli* Fuckel

Exobasidium andromedae Karsten (1882), NON *E. andromedae* Peck (1874)

On *Cassiope tetragona* (L.) D. Don this Fungus causes elongation of the young shoots, and at the same time a considerable enlargement of the leaves, which as a result become much thickened, wax-like, and orange to deep reddish in colour. As the basidia and spores are matured, the waxy, reddish leaves become covered with a white scurf. Juel's photograph (*l.c.* Plate VII, figure 3) illustrates the symptoms very well. Usually the basidia are produced on the under side of the host leaves, but not infrequently they are formed on both the upper and lower surfaces, and to this condition Juel has applied the name *E. vaccinii* var. *myrtilli* f. *amphigena* Juel. In making a study of the specimens listed below, the material that was sectioned showed all degrees of distribution from hypogenous to amphigenous. For this reason it hardly seems practicable to maintain the form name, but better to recognize that the extent of the hymenial layer is dependent partly on the age of the host, and partly on the local environmental factors.

The host range of this species is rather extensive within the Ericaceae. Thus Juel (*l.c.*) records it as occurring on *Vaccinium vitis-idaea, V. uliginosum, V. myrtillus, Arctostaphylos alpina, Andromeda polifolia, Cassiope,* and *Lyonia calyculata.*[1] All the specimens listed below are on *Cassiope tetragona* (L.) D. Don.

As may be surmised from the variety and distribution of the hosts, this species is predominantly arctic-alpine in distribution, but may descend to the lower elevations in Europe—and probably also in America.

E. Arctic Occurrence.

3. N. BAFFIN: *Pond Inlet,* Polunin Sept. 4, 1936—No. 2470a-24.

4. C. BAFFIN: *Cumberland Sound,* Soper[2] Aug. 2, 1924—No. 111589.

5. S. BAFFIN: *Lake Harbour,* Polunin July 26-8, 1936—No. 1170a-27; Polunin Aug. 27, 1936—Nos. 2295a-53, 2309a-10; *Cape Dorset,* Polunin Aug. 25, 1936—No. 2381a-46.

8. N. QUEBEC: *Wolstenholme,* Polunin Aug. 1, 1936—No. 1297b-3.[3]

10. W. COAST HUDSON BAY: *Chesterfield,* Polunin Aug. 19-20, 1936—No. 2246a-12.

59. **Exobasidium vaccinii-uliginosi** Boudier, in Boudier & Fischer, Bull. Soc. Bot. France, XLI, pp. ccxliv-ccxlv (1894).

This species, characterized by its 2-sterigmate basidia and by the large spores, which measure 18-27-(30-32) x 7-12μ, stimulates shoots to elongate but apparently does not cause "witches brooms". The basidia are formed in a layer on the under side of the enlarged and somewhat thickened leaves; as a result, this surface becomes covered with a white bloom that contrasts with the waxy-red upper side.

This is apparently a species of boreal and alpine distribution, having been collected in Switzerland, the Austrian Tyrol, and in North America on Mount Rainier, Washington. According to Juel (1912, p. 367), Rostrup's reports (1888, p. 530, 1894, p. 51, and 1903, p. 293) in which *E. vaccinii* is said to occur on *Vaccinium uliginosum* should in part be transferred to *E. vaccinii-uliginosi,* which would extend the range of the latter to include

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[1] *Chamaedaphne calyculata* (L.) Moench. (N.P.)

[2] John Dewey Soper specimen presumably obtained from the National Museum of Canada. (N.P.)

[3] Also at Wakeham Bay, according to my 1936 field notes—*See* Part III of the present series. (N.P., October 1946.)

Greenland and Iceland. Undoubtedly when the specimens are more carefully studied, many of those reported as *E. vaccinii* from the higher elevations in the northeastern United States will prove to belong to the present species.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 19-20, 1936—on *Vaccinium uliginosum* L. var. *alpinum* Bigel., No. 2611a-38.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—on *Vaccinium vitis-idaea* L. var. *minor* Lodd., No. 2309a-11; *Cape Dorset,* Polunin Aug. 25, 1936—on *Vaccinium uliginosum* var. *alpinum,* No. 2381a-47.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 27, 1934—on *Vaccinium vitis-idaea* var. *minor,* No. 223a-1.[1]
10. W. Coast Hudson Bay: *Chesterfield,* Polunin Aug. 19-20, 1936—on *Vaccinium uliginosum* var. *alpinum,* No. 2218a-4.

60. **Thelephora terrestris** Ehrh., in Fries, Syst. Myc. I, p. 431 (1822).

This species is frequently encountered in open, sandy places where it encrusts fallen twigs or the standing stems of bushes or even grasses. From the encrusted area, which often forms a stipe-like base, there arise the radiate-dimidiate pileus or pilei.

The species is recorded from Russia in Asia and is not uncommon in Europe. In North America its range extends from Skagway in Alaska and Fairchild Point in the District of Mackenzie to Newfoundland and finally Jamaica. It would thus appear to be almost cosmopolitan in distribution.

E. Arctic Occurrence.

2. Devon, etc., Islands: *Dundas Harbour,* Polunin Sept. 7, 1936—No. 2498b3.

AGARICALES

61. **Cantharellus ? brownii** Berkeley & Broome, Ann. Nat. Hist. ser. 2, II, p. 262 (1848).

This specimen is referred here with considerable doubt because Cooke (1888-90, Pl. 1058 "1106") shows the species to have a slight brownish colour to the pileus, whereas this specimen is said in Dr. Polunin's field notes to be all white. However, the specimen agrees very closely with Rea's description (1922, p. 543), which gives the colour as ochraceus-white or cream coloured, and the spore measurements as 7 x 5-6μ. The species has been reported previously only from England.

E. Arctic Occurrence.

4. C. Baffin: *Pangnirtung,* Polunin Sept. 19-20, 1936—No. 2611a-39.

62. **Clitocybe fritilliformis** (Lasch) Saccardo,[2] Syll. Fung. V, p. 178 (1887); Lange, Fl. Agaric. Danica I, p. 86, Pl. XXXVI, fig. D (1935) (as *C. fritillaeformis* (Lasch) Fr.).

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[1] Also at Wakeham Bay "frequently parasitizing *Vaccinium uliginosum* var. *alpinum*" according to my late July, 1936, field notes—*See* also Part III of the present series. (N.P., October, 1946).

[2] Not "Lasch ex Fries" or "(Lasch) Fries" (Epicr. Syst. Myc., p. 74 (1836-8); Hymen. Europ., p. 101 (1874)), as there the species was published under *Agaricus* (Section *Clitocybe*). (N.P.)

I have followed Lange (*l.c.*) in placing the small-spored plants of the section Laeticolores in *C. fritilliformis,* rather than in *C. fragrans* (Sow.) Fr. One wonders from the available descriptions whether the two species should be kept distinct, as in macroscopical characters they are much alike and the spore dimensions approach each other. Thus, according to Bresadola (1928b, p. 181), the spores of *C. fragrans* should measure 6 x 2-2·5μ, whereas according to Lange (1935, pp. 85-6) they should measure 7-8 x 3·5-4μ and those of *C. fritilliformis* should be 5 x 3·5μ.

The species occurs in the northern half of Europe and in Italy. In America it has been reported only once—from the higher elevations in the Rocky Mountains at Tolland, Colorado—cf. Kauffman (1923, p. 126).

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—No. 2295a-56.

63. **Clitocybe** (Laccaria) **laccata** [Scop.][1] Quélet, Champ. Jura Vosges, p. 55 (1872).

var. **rosella** [Batsch] Lange, Fl. Agaric. Danica I, p. 90 (1935).

Agaricus rosellus [Batsch][1] Elenchi Fung. contin. prima, p. 23, Pl. XIX, figure 99 (1786).

The variety differs from the typical form of the species only in its smaller stature. It is possibly a mere ecological phase.

It is difficult indeed to ascertain the range of this variety. However, according to Saccardo (1887, p. 198) the range of *Clitocybe laccata* includes Europe, North America, Asia, Africa, and Australia. Whether or not the variety is to be found everywhere the species occurs, as would be expected if it is only an ecological variant, cannot at present be determined.

E. Arctic Occurrence.

8. N. Quebec: *Wolstenholme,* Polunin Aug. 24, 1936—No. 2250a-4; *Cape Smith,* Polunin Aug. 3, 1936—No. 1299a-7.

64. **Clitocybe metachroa** Fries, Syst. Myc. I, p. 172 (1821) (as *Agaricus* (trib. XI *Omphalia*) *metachrous*).

I have placed this specimen here with some hesitation, as the species appears to be merely one of a complex that is difficult to differentiate into its component parts—at least, without accurate information as to the hygrophanous nature of the pileus and the changes in colour on drying. For this reason, then, the following transcript of Dr. Polunin's field notes is given, with my own additions enclosed in brackets: pileus convex, 1-3 cm. in diameter, moist, glabrous, dark brown or when mature [on drying?] lighter brown, the margin entire; gills crowded, unequal in length [branching], [adnate-decurrent], entire on margin, pale greyish or buff-coloured; flesh soft, light brown; stipe fragile, fibrous, smooth, brown above, lighter towards the base; [spores hyaline, smooth, ovoid with oblique apiculus, 5·5-6 x 3-3·5μ].

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[1] The square brackets are employed because the epithets were published before the beginning of legitimate nomenclature in this group (*See* Briquet 1935, p. 4, and cf. footnote (¹) on p. 252). Fries's publications (Syst. Myc. I, p. 106, 1821), usually cited, were merely of Clitocybe "trib. VIII" (of *Agaricus,* which was maintained throughout as the generic name). (N.P.)

In North America *Clitocybe metachroa* has been collected in New York, Ohio, Tennessee, Michigan, and Wisconsin. The present collection thus constitutes a new northern record for the species in the Western Hemisphere. It is apparently not uncommon in Europe.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936—No. 2498b-3.

65. **Clitocybe rivulosa** [Pers.][1] Quélet, Champ. Jura Vosges, p. 214 (1872).

The two specimens listed below are rather small for this species, their pilei only measuring up to 2 cm. in diameter, whereas Lange (1935, p. 80) and Bresadola (1928a, p. 141) respectively state the diameter to be 2-4 and 2-5 cm. The present specimens, however, closely resemble those illustrated by Lange. Moreover, the spore dimensions agree perfectly with those given by the same author. It would thus appear that our present specimens, conforming as they do to the species in everything but size, represent a mere depauperate form of *C. rivulosa.* This species is known from various parts of Europe, and in North America occurs in New York and North Carolina.

E. Arctic Occurrence.

3. N. BAFFIN: *Arctic Bay,* Polunin Sept. 8-11, 1936—Nos. 2533a-8 and 2589a-8.

66. **Cortinarius** (Phlegmacium) **allutus** Fries, Epicr. Syst. Myc., p. 263 (1836-8).

There is little doubt that this material agrees perfectly with the Fungus depicted by Cooke (1886-8, Plate 704 "752") and described by Rea (1922, p. 139). Nevertheless there must remain some question as to the identity of our plant because in none of the works consulted could I find the dimensions of the spores. The spores of the present specimen are deeply coloured, the walls somewhat warted, and the dimensions variable, from 13-20 x 8·5-9μ.

The species was heretofore known only from England and Continental Europe.

E. Arctic Occurrence.

2. DEVON, ETC., ISLANDS: *Dundas Harbour,* Polunin Sept. 7, 1936—No. 2523a-17.

67. **Cortinarius** (Hydrocybe) **fasciatus** Fr. *sensu* Bresadola, Icon. Myc. XIV, p. 670, Pl. 670 (1930); Rea, British Basidiomycetes, p. 194 (1922).

Our single specimen representing this species does not have as pronounced an umbo as is described by Rea, but more nearly approaches the specimen illustrated by Bresadola (*l.c.*) in longitudinal section. Rea (*l.c.*) gives the spore measurements as 8-9 x 5-6μ, whereas Bresadola (*l.c.*) states that they are 6-9 x 4-5μ. In the present specimen the spores are 8·5-10·5 x 4·5-5·5μ. Also, Bresadola gives the size of the basidia as 25 x 6-7μ, but in our specimen they measure 22·5-27 x 7·5μ and bear 2-4 sterigmata.

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[1] Cf. footnote on previous page. (N.P.)

The species has so far been reported only from Europe.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin Aug. 30, 1936—No. 2446a-6.

68. **Cortinarius** (Telemonia) **incisus** (Pers.) Fries, Epicr. Syst. Myc., p. 301 (1836-8).

This specimen is determined as *C. incisus* with some doubt, as the only field notes that accompany the material, preserved in alcohol-glycerine, are: "dark-brown, on bog moss". The single fructification measures 14 mm. across the pileus, which latter is slightly umbonate, appears to be radiate-striate, and has a wavy margin. The lamellæ are unequal, subdistant, and adnexed. The stipe is approximately 14 x 3 mm., brownish, and shows remnants of the cortina. The basidia are 2- to 4-sterigmate and bear spores that are mostly 10-12 x 6·5-7·5μ. With regard to geographical range, Kauffman (1932, p. 337) records the species as occurring in Colorado and in Europe northwards to Sweden. Bresadola (1930, p. 656) states that it is rather frequent in humid places in coniferous woods from spring until autumn, but gives only Europe as the area of distribution.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2588a-8.

69. **Dictyolus** (Pleuropus) **muscigenus** [Bull.][1] Quélet, Enchirid. Fung., p. 140 (1886).

Cantharellus muscigenus (Bull.) Fries

This little Fungus appears to be not uncommon in northern regions, where it grows on mosses in damp places. According to Dr. Polunin's field notes, the specimens listed below vary from greyish brown to dull grey-brown. In appearance and consistency the preserved material is very reminiscent of species of *Auricularia.*

The species is known from Australia, Europe, and Greenland. On the American continent it persists northwards to Alaska.

E. Arctic Occurrence.

3. N. Baffin: *Pond Inlet,* Polunin Sept. 4, 1936—No. 2470a-27; *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2588a-9.

70. **Hygrophorus miniatus** Fries, Epicr. Syst. Myc., p. 330 (1836-8).

Hydrocybe miniata [Scop.] Murrill

In his field notes, Polunin states that in July this was the only gilled Fungus that was common around Port Burwell, where the orange to yellowish fructifications made their appearance among moss in low, swampy ground. The species is known from North America, Greenland, Europe, India, and Australia.

E. Arctic Occurrence.

7. N. Labrador: *Burwell,* Polunin July 23-5, 1936—No. 1114a-32.

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[1] Bulliard's *Agaricus muscigenus* (on which the present combination is based) was published in 1785, i.e., before the beginning of legitimate nomenclature in this group, hence my use of square brackets—cf. footnote (1) on p. 252. (N.P.)

71. **Omphalia griseo-pallida** Desmazières, Pl. Crypt. de France, ser. 1, fasc. 3, No. 120 (1826).

Omphalia griseola [Pers.] v. Höhnel

?Omphalina rustica (Fries) Quélet

The material cited below agrees very closely in microscopical details with the published descriptions. However, as specimens determined from alcoholic material with inadequate field notes are always doubtful, it is deemed advisable to furnish the following few notes: pileus 7 mm. in diameter, "grey-brown, the gills lighter greyish"; cystidia absent; basidia (1)-2-4-sterigmate; spores refractive or seemingly light coloured under the microscope, somewhat pip-shaped from the oblique apiculus, smooth, mostly 9·2 x 5-5·3µ.

The species is known from temperate North America, Europe, and Africa. In discussing *Omphalina rustica,* which seems to be synonymous, Murrill (1916, p. 347) mentions its occurrence in New York, Illinois, and Ohio.

The present collection, therefore, is a great extension northward of the known range of this Fungus in North America.

E. Arctic Occurrence.

8. N. Quebec: *Sugluk,* Polunin July 31, 1936—No. 1481a-6.

72. **Omphalia umbellifera** [L.][1] Fries, Hymen. Eur., p. 160 (1874).

Omphalia pseudoandrosacea Bull. in Fries

Omphalia umbellifera [L.] Fries *f. albida* Lange

At first I was inclined to follow Lange (1936, p. 58) and to recognize his form, but, as the number of collections that were studied increased, it became more and more evident that there was a transition from the white or cream-coloured phases to those of a darker hue. This subsequent concept of the species is in agreement with that of Bresadola (cf. 1928c, p. 266), who considered the differently coloured fructifications to be mere variants of the same species.

According to Bresadola (*l.c.*), *O. umbellifera* is found in Europe, eastern India, Tunis, Central Africa, Tasmania, North America, and Greenland. In spite of the wide range implied by the above statement, it is altogether probable that when this species is reported from tropical countries the gatherings come merely from the highlands of those regions. In this connection it seems significant that Rea (1922, p. 429) remarks that the species is common in boggy ground in woods and on mountains in England, that Saccardo, Peck and Trelease (1904, pp. 47-8) record a relatively large number of stations in Alaska, and, finally, that Rostrup (1888, p. 528) states that it is the commonest and most widespread of the Agaricaceae in Greenland, occurring from Umanak (73° 59′ N.) to Nanortalik (60° 10′ N.).

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2588a-7.
4. C. Baffin: *Clyde,* Polunin Sept. 15, 1936—Nos. 2591a-6 and 2591a-7; *Pangnirtung,* Polunin Sept. 19-20, 1936—No. 2611a-41.

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[1] Square brackets are employed for reasons given in footnote (¹) on page 252. (N.P.)

7. N. Labrador: *Burwell,* Polunin July 23-25, 1936, and Sept. 25, 1936—Nos. 1114a-33 and 2643c-5, respectively.
8. N. Quebec: *Wolstenholme,* Polunin Aug. 1, 1936—No. 1297a-11.

73. **Russula fragilis** [Pers.][1] Fries, Epicr. Syst. Myc., p. 359 (1838).

Only the pileus, with the basidia and basidiospores, was available for the determination of the species. However, the colour of the pileus and measurements and markings of the spores all agreed very closely with the description and illustrations of Crawshay (1930, p. 127, and Plates VII-VIII), and indicated that the specimen should be classified as *R. fragilis.*

The species appears to be widespread in the temperate to subarctic or even arctic regions, having been reported from North America (it is not rare in Massachusetts and occurs in the mountains as far south as Virginia), Europe, Siberia, Japan, and even Australia. Rostrup (1885, p. 220) records it from Iceland.

E. Arctic Occurrence.

5. S. Baffin: *Cape Dorset,* Polunin Aug. 25, 1936—No. 2381a-54.

74. **Russula ochroleuca** [Pers.][2] Fries, Epicr. Myc., p. 358 (1838).

These specimens are identical with material in the Farlow Herbarium from Stockholm, Sweden, and determined by Lars Romell. They differ from the descriptions of Crawshay (1930, p. 131) and Murrill (1915, p. 218) in that the gills do not appear to be free but instead adnate or even slightly decurrent as lines on the stipe. The spores, however, agree perfectly with those figured by Crawshay (1930, Plates XIV-XV), and this fact should have more taxonomic weight than a mere variable vegetative character.

According to Murrill (1915, p. 218) this species has been reported only from Alabama in North America, but it appears to be more common and widespread in Europe. The present collections represent the northernmost station from which it has been reported in North America.

E. Arctic Occurrence.

5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—Nos. 2309a-15 and 2309a-16.

Lycoperdales

75. **Bovista plumbea** Persoon, [Obs. Myc. I, p. 5, 1796] Syn. Meth. Fung., p. 137 (1801).[3]

This species, widespread in temperate regions, had also been reported from Greenland by Rostrup (1894, p. 52).

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936—Nos. 1419a-10 and 1480a-7.

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[1] Persoon's *Agaricus* (*Russula*) *fragilis*, on which the present combination is based, was published in the Synopsis Methodica Fungorum, p. 440, 1801. This was before the beginning of legitimate nomenclature in the present group—hence my use of square brackets (*See* Briquet 1935, p. 4, and cf. footnote (1) on p. 252.). (N.P.)

[2] This name was published by Persoon as early as 1796 (Observationes Mycologicae I, p. 102), but became valid only with Fries's repetition of it at a "legitimate" date (after Fries's Systema Mycologicum, 1821-32, in these *Fungi caeteri*—cf. Briquet 1935, p. 4). Hence the necessity for square brackets—cf. footnote (1) on p. 252. (N.P.)

[3] Persoon validated his own species by repeating the name in his publication of 1801, with which legitimate nomenclature in the Gasteromycetes first began—cf. Briquet 1935, p. 4. (N.P.)

76. **Calvatia cretacea** (Berk.) Lloyd, Myc. Writ. V, p. 650, fig. 929 (1917).

Lycoperdon cretaceum Berkeley

Calvatia borealis Th. Fries

The series of specimens represented by the collections listed below, show that there is a rather wide range of variation in the ornamentation of the peridium in this species. Thus there is a transition from the large and areolate, pyramidal warts, which resemble those of *Calbovista subsculpta* E. E. Morse (1935, pp. 96-101, and Pls. XII-XV), to smaller warts approaching in size and proximity those of *Scleroderma vulgare.* From the larger warts on the upper surface of the peridia, the transition continues until at the base of many fructifications the warts are represented by the furfuraceous outer layer. The weathered specimens are smooth and somewhat shining where the outer peridium has dropped off. It should, moreover, be added that although this species is generally characterized by its purplish-brown gleba, certain of the present specimens have a slightly olive cast to the younger central part of this organ. *Calvatia cretacea* has so far been recorded only from Alaska, the Canadian Arctic, and Sweden.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2575a-5.
7. N. Labrador: *Burwell,* Polunin July 23-5, 1936, and Aug. 30, 1936—Nos. 1114a-31 and 2446a-5, respectively.
8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936—No. 1471a-5; *Wolstenholme,* Polunin Aug. 1, 1936—No. 1297a-9.

77. **Calvatia fragilis** (Vitt.) Morgan, Jour. Cincinnati Soc. Nat. Hist., XII, p. 168 (1890).

Lycoperdon fragile Vittadini

This species very closely resembles *Calvatia cyathiformis* (Bosc.) Morgan. The peridial markings are similar, the spores are purple *en masse,* and the diaphragm below the fertile gleba is well developed. Unlike *C. cyathiformis,* however, the sterile base in *C. fragilis* is not well developed; indeed in the Lake Harbour specimen it is all but absent. The species occurs in the northern parts of both Europe and North America.

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2588a-6.
5. S. Baffin: *Lake Harbour,* Polunin Aug. 27, 1936—No. 2295a-55.

78. **Lycoperdon furfuraceum** [Schaeff.][1] Saccardo, Syll. Fung. VII, 1, p. 110 (1888).

In external characters Polunin's specimens collected at Arctic Bay agree very well with others of the same species which I collected myself in Holland, and which were determined as *L. furfuraceum* by Dr. Lütjeharms and other members of the Dutch Mycological Society. The spores of the Baffin Island specimen, however, are somewhat larger than those of the Dutch material, measuring 5·5-6μ in diameter. The species is known from North America and Europe. It has also been recorded from Greenland.

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[1] Schaeffer's publication of this species, which was alone cited by Dr. Linder, was before the beginning of legitimate nomenclature in this group—*See* Briquet (1935, p. 4) and cf. footnote (1) on p. 252. I consequently place square brackets around Schaeffer's name and cite after it the earliest "legitimate" author that I can find. This is Saccardo (*l.c.*), who fortunately cites Schaeffer's figure. (N.P.)

E. Arctic Occurrence.

3. N. Baffin: *Arctic Bay,* Polunin Sept. 8-11, 1936—No. 2575a-6.

79. **Lycoperdon polymorphum** Vittadini, Monographia Lycoperdineorum, p. 39, Pl. II, fig. 7 (1842).

Although this and the preceding species are by many authors considered to be synonymous, and it may in fact be true that such is the case, nevertheless one specimen is placed here for the time being as it agrees very closely with Coker and Couch's (1928, pp. 92-3) concept of the species, which has already been recorded from both North America and Europe.

E. Arctic Occurrence.

8. N. Quebec: *Wakeham Bay,* Polunin July 29-30, 1936—No. 1471a-6.

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PLATE XII

All drawings were made with the aid of a camera lucida from material mounted in glycerine, and, with the exception of figure C, are reproduced at a magnification x 1050.

Figures A-C. *Micromyces echinocystis* n. sp. Figure A shows the spiny prosorus in relation to the contents of the host cell, and although it is in the cell of *Mougeotia* sp. it is almost identical with the prosori that occur in *Zygnema* sp. Figure B is more characteristic of the prosori usually found in *Mougeotia,* because it is more elongate. Figure C shows the Fungus in relation to the host, and demonstrates the absence of abnormal enlargement thereof. This last figure is approximately 110 x.

Figure D. *Micromyces wheldenii* n. sp. The host cell (of *Zygnema* sp.) is greatly enlarged and has become globose-inflated as a result of the action of the invading Fungus, which is here shown with its characteristic short, straight spines.

Figure E. *Micromyces minimus* n. sp. In the upper cell of the host is shown the typical, relatively large, spinose prosorus, and in the lower cell are shown six, smooth, small prosori and a seventh, small, spinose prosorus. Note that this last is larger than the smooth prosori, but smaller than the prosorus that has developed alone. The host shows no sign of hypertrophy.

Figures F-G. An undetermined operculate Chytridiaceous Fungus growing on *Zygnema* sp.

Figure H. *Phlyctochytrium magnum* n. sp. This figure shows the obovoid extramatrical sporangium, which is ornamented just below the apex by four pairs of spine-like processes, and also shows the intramatrical, bladder-like cell, which is somewhat plasmolyzed.

Plate XII

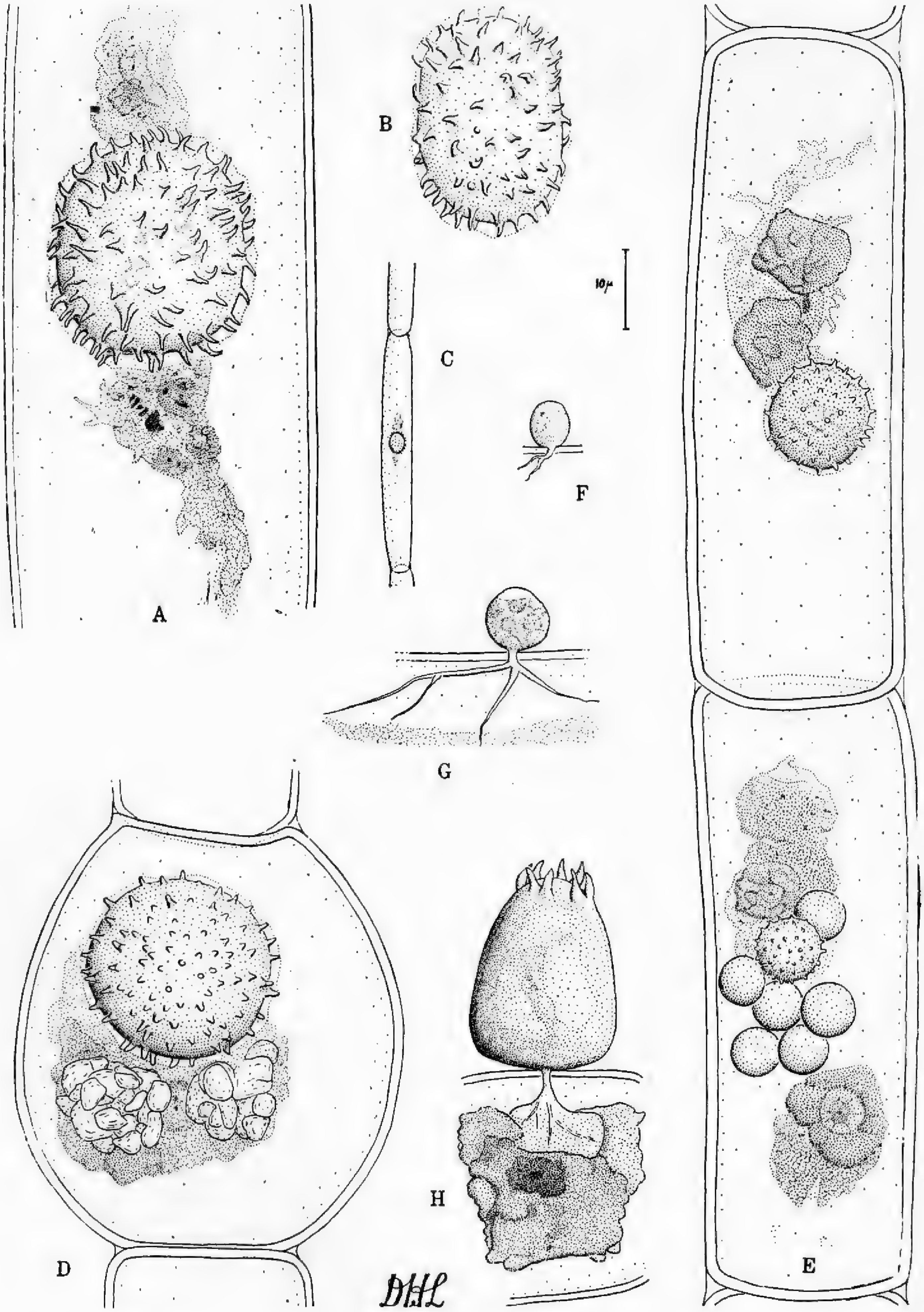


PLATE XIII

All drawings were made from material first mounted in lactophenol-cotton blue and then transferred to glycerine-phloxine, and are reproduced at a magnification of 1050 x.

Figures A-B. *Lagenidium rabenhorstii* Zopf. Figure A depicts the sporangial stage and the numerous discharge-tubes. Figure B shows an empty sporangium and discharge-tube, and the resting spore formed within the host.

Figures C-F. *Aphanomyces norvegicus* Wille. Figure C shows an oospore, with attached antheridium, that had been formed outside the host, whereas in figure D the oogonia are within the host. In figure E the vegetative mycelium runs parallel to the host filament, but sends out lateral branches that either surround or penetrate the adjacent host cell. Figure F shows the only slightly altered vegetative hypha that penetrates to the outside and, unmodified, serves as a sporangium.

Figure G. *?Rhizophidium digitatum* Scherffel. The thick, finger-like processes around the apex of the extramatrical sporangium of this specimen are stouter and blunter than those figured by Scherffel. It is impossible to tell whether the intramatrical structure is bladder-like or whether it consists of a number of rhizoids clustered around some structure in the host cell.

Figure H. A Chytridiaceous Fungus resembling *Chytridium spinulosum* Scherffel, but differing in the small dimensions of the extramatrical verrucose or bluntly spinose sporangium.

Plate XIII

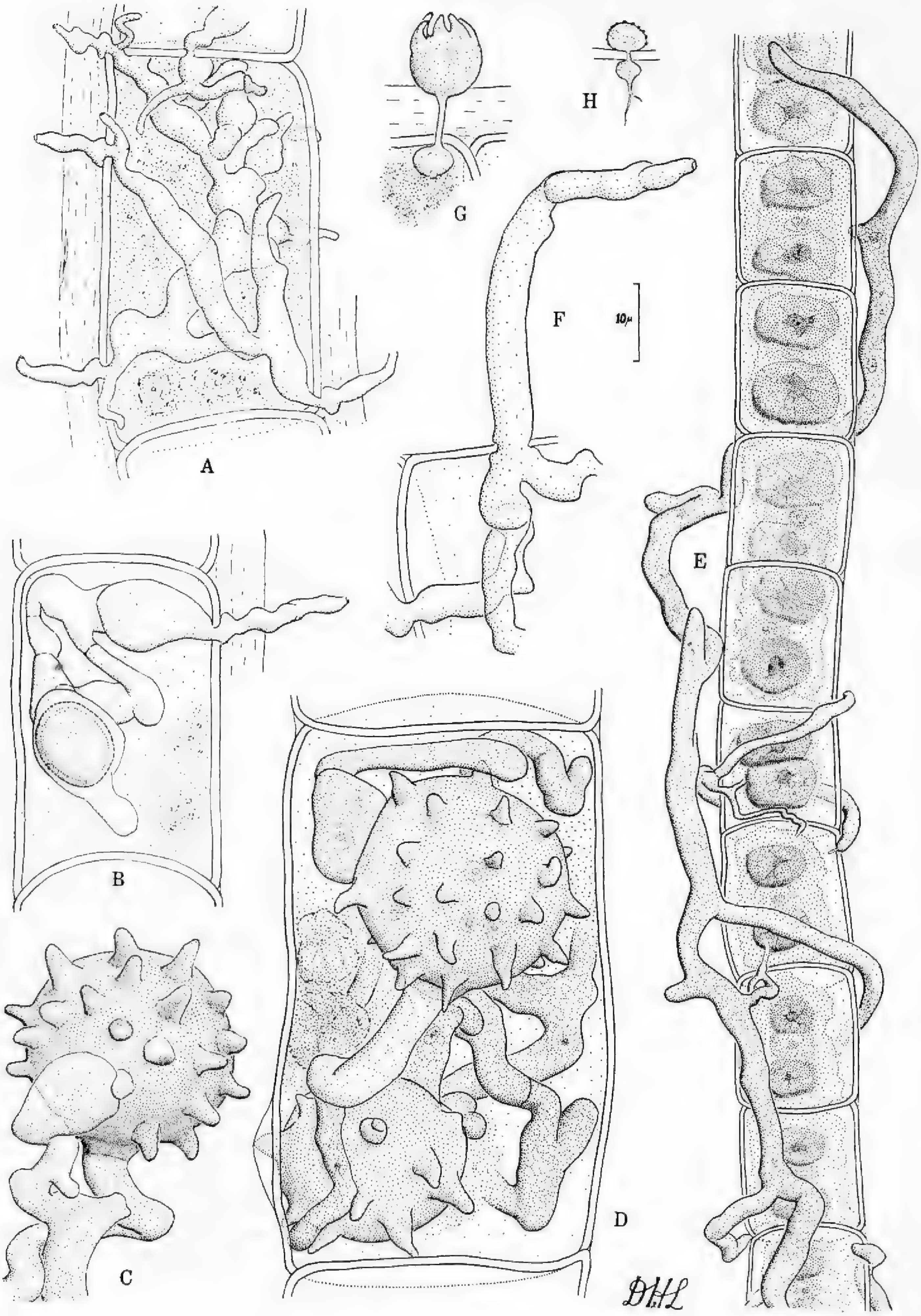


Plate XIV

All drawings except the two habit sketches were drawn with the aid of a camera lucida. The ascus tips and ascospores of figures A and B are reproduced at a magnification of 1350 x. The asci and paraphyses of figures A and B, the conidia of figure C, all of figures D and E, and the ascospores of figure F, are represented at 1050 x. The conidiophores of figure C and the ascus and perithecial bristle of figure F are reproduced at 350 x, and the two habit sketches of figures A and B are at 4 x.

Figure A. *Cudoniella muscorum* n. sp. Asci, paraphysis, and ascospores are here shown for comparison with those of *Cudoniella borealis*. Note that the tips of the asci appear to be somewhat pinched, and that only the upper one-third of the terminal cell of the paraphysis is pronouncedly inflated.

Figure B. *Cudoniella borealis* n. sp. Compare with the preceding figure. The ascospores show less tendency to be fusoid.

Figure C. *Cladosporium bruhnei* n. nom. The conidiophores are shown arising from a pseudoparenchymatous stromatic base. They become knob-like at the apices where the spores are produced; thus when the conidiophores continue to elongate these sporogenous areas form the swollen geniculate parts of the lower cells.

Figure D. *Mycosphaerella lineolata* (Desm.) Schröter. Ascus and ascospores.

Figure E. *Pseudopeziza drabae* (Nannf.) Nannfeldt. Paraphysis, ascus, and ascospores.

Figure F. *Pyrenophora comata* (Awd. & Niessl.) Saccardo. A single ascospore, and ascus, and (above) a bristle from around the ostiole of the perithecium.

PLATE XIV

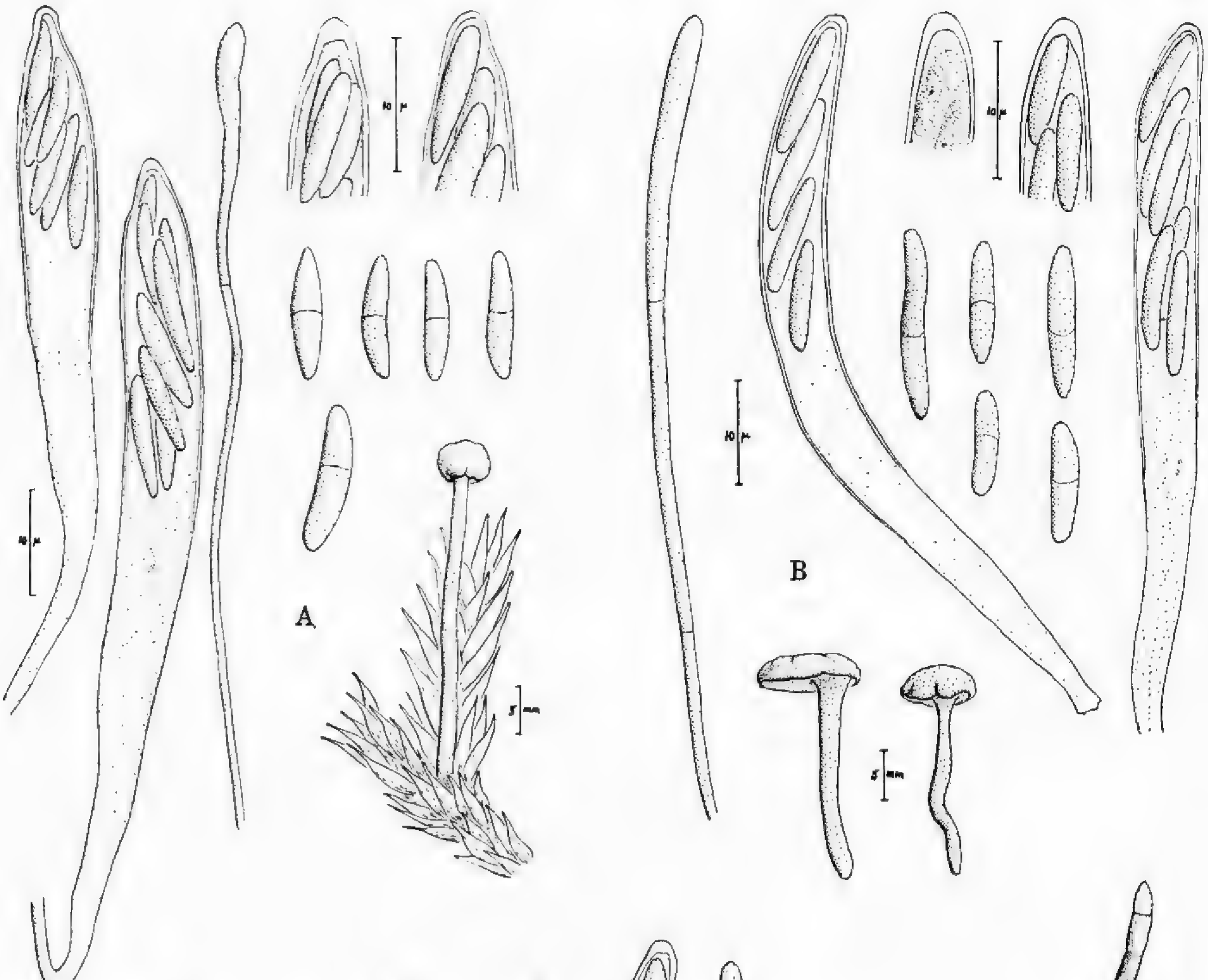


PLATE XV

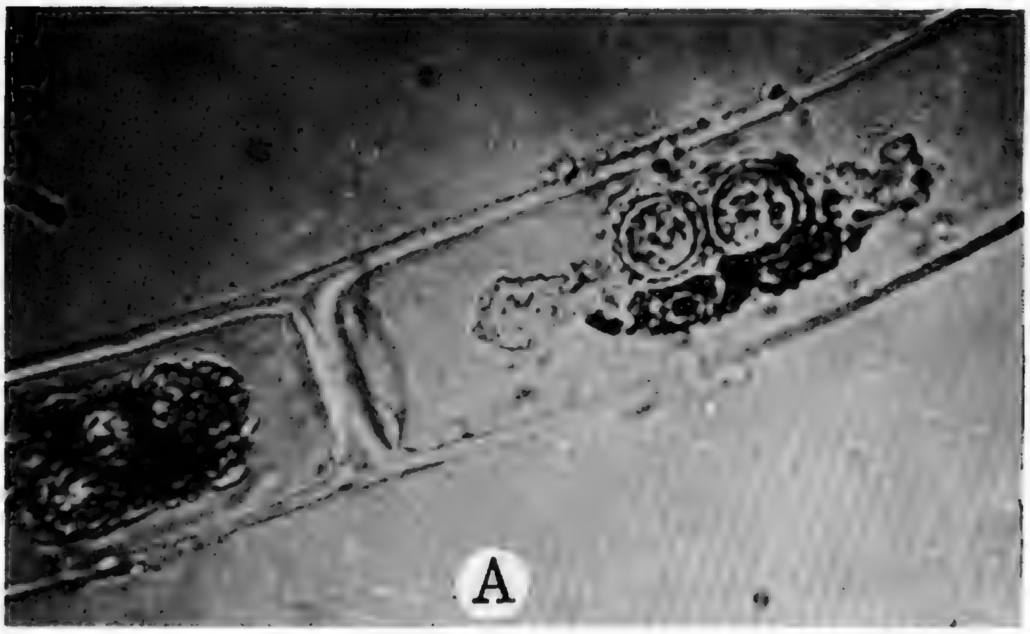
All photographs were taken of material mounted in glycerine and at a magnification of approximately 700 x.

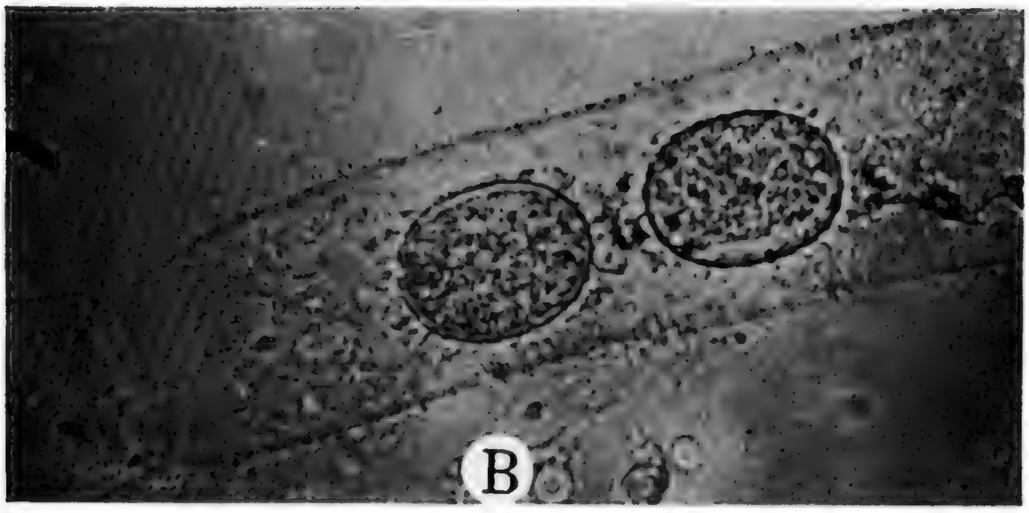
Figure A. *Micromyces minimus* n. sp. showing two spinose prosori in the cells of *Zygnema* sp. Note that there is no bulging of the host cell.

Figure B. *Micromyces echinocystis* n. sp. showing two spinose prosori in the cells of *Mougeotia* sp., where they cause little or only very slight enlargement of the host cell.

Figure C. *Micromyces wheldenii* n. sp., which causes a spherical or ellipsoidal enlargement of the cells of *Zygnema* sp.

PLATE XV





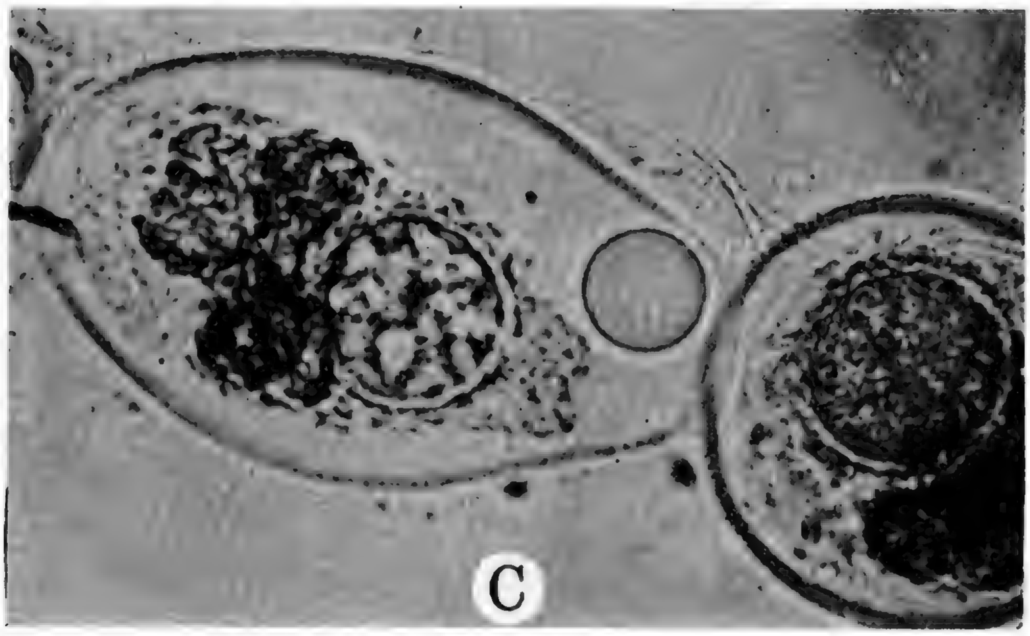


Plate XVI

Puccinia ustalis Berkeley var. *pulsatillae* (Kalchbr.) n. comb.

The photograph in figure A was taken at a magnification of approximately 700 x. the material being first mounted in lactophenol-cotton blue and then remounted in glycerine-phloxine. Figure B shows the host at $\frac{7}{8}$ x.

Figure A. The elongate, 2-celled teleutospores and the fasciculate paraphyses are shown arising from the pseudoparenchymatous, stroma-like tissue and pushing against the epidermal cells of the host. The fasciculate paraphyses and the clustered teleutospores give the sorus a loculate appearance.

Figure B. The rust sori are shown on the host, *Ranunculus pedatifidus* Sm. var. *leiocarpus* (Trautv.) Fernald, as dark *Rhytisma*-like spots on the leaves and petioles.

PLATE XVI

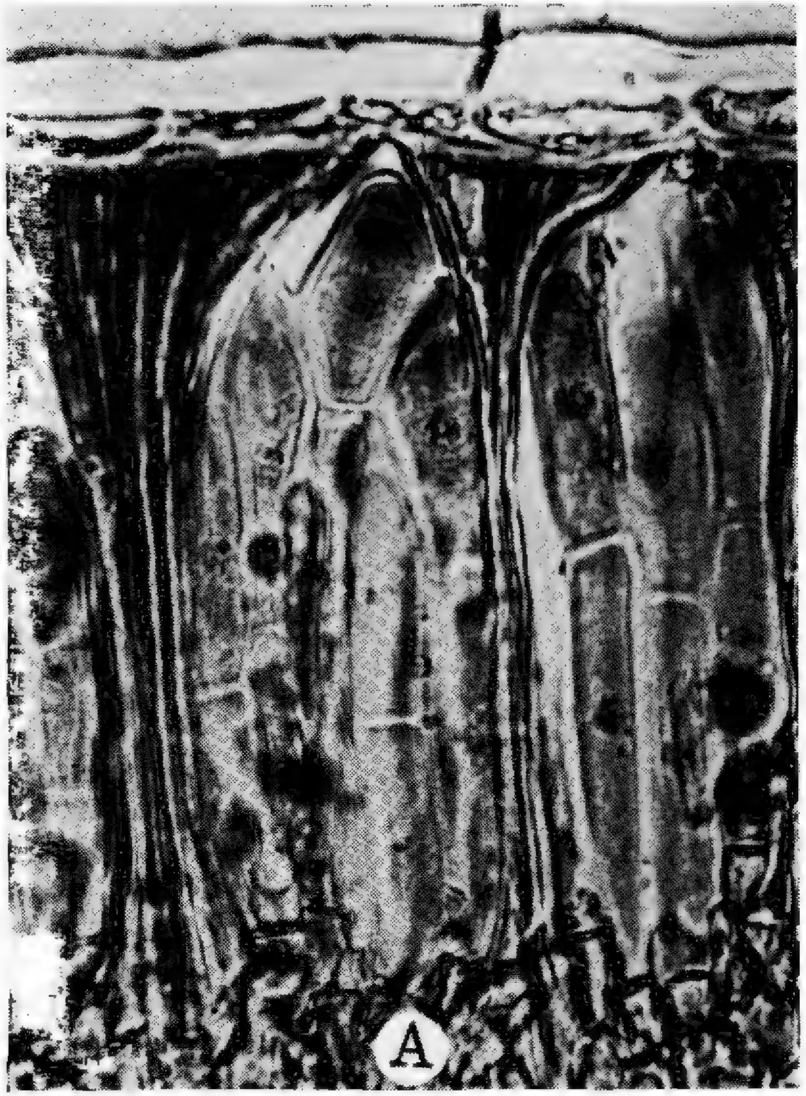


PLATE XVII

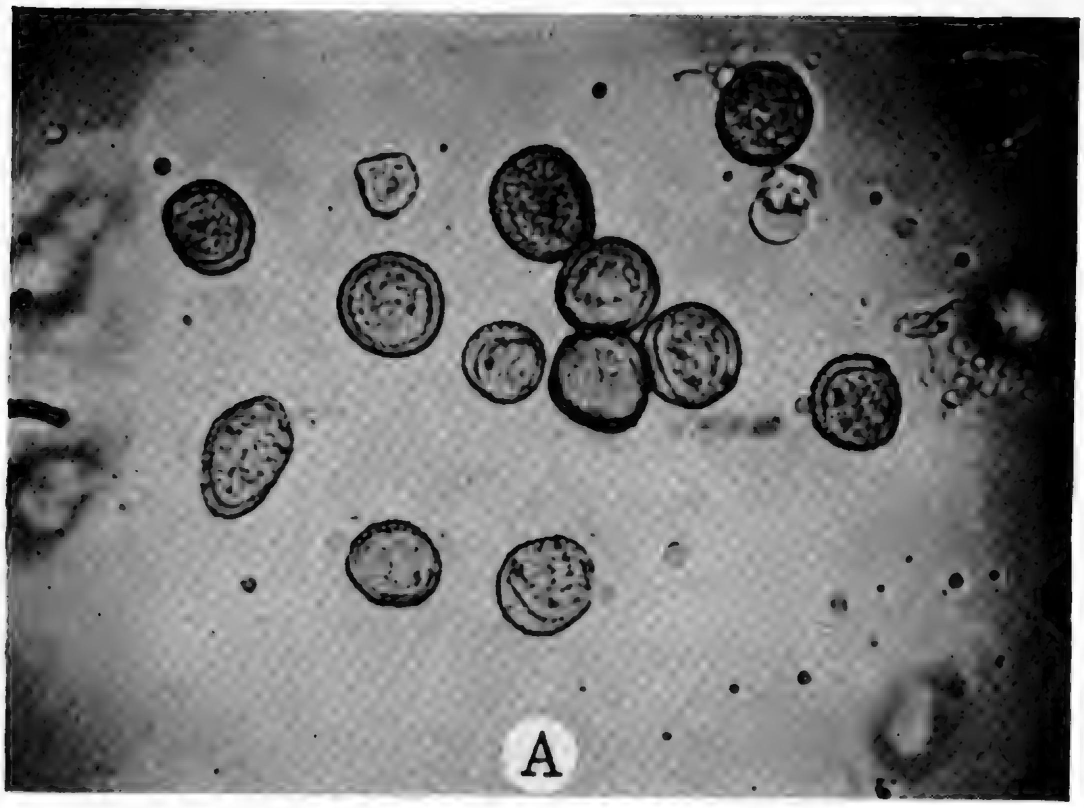
Ustilago inflorescentiae (Trel.) Maire

The photographs were taken from material mounted in lactophenol and then remounted in glycerine. Magnification approximately 700 x.

Figure A. Spores from the bulbils of *Polygonum viviparum* L. to show their size, and also the sculpturing of the cell walls. Compare with spores shown in figure B. From specimen No. 1299a-1, collected at Cape Smith, N. Quebec.

Figure B. Spores from the inflorescence of *Polygonum viviparum,* which refute Trelease's statement that the spores are smooth. Note that the spores are as pronouncedly sculptured as those shown in figure A, and that they are approximately the same size. From type material collected by Trelease in Alaska.

Plate XVII



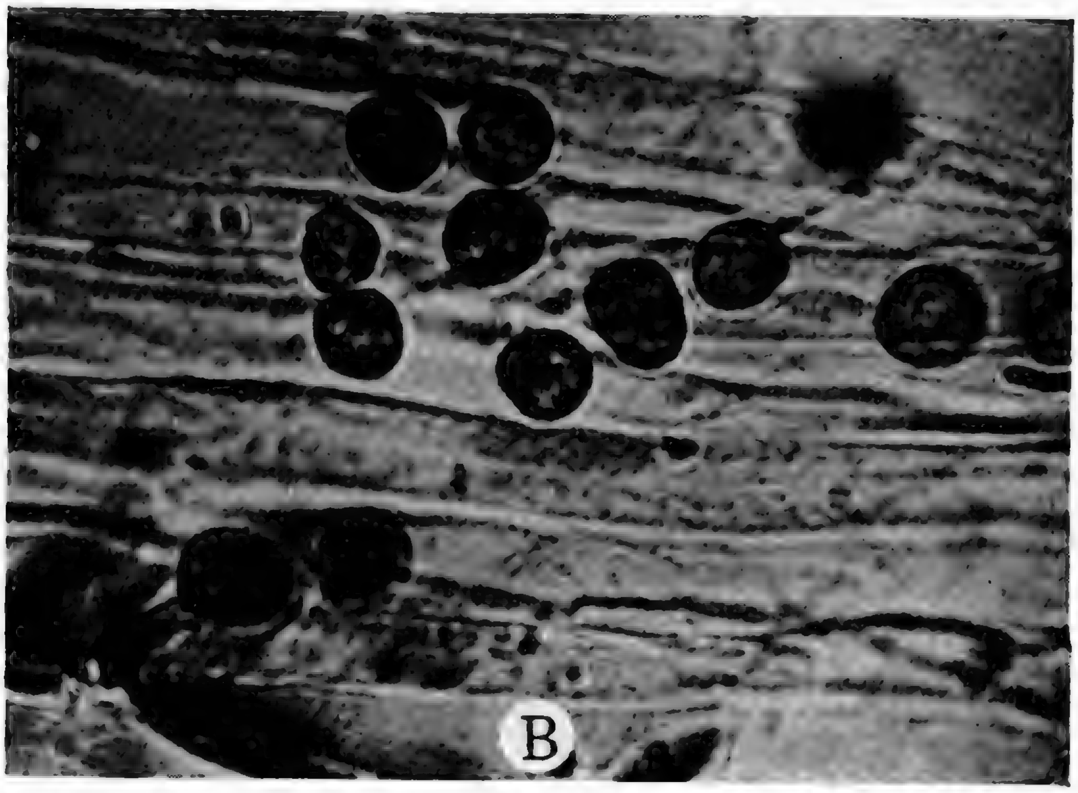
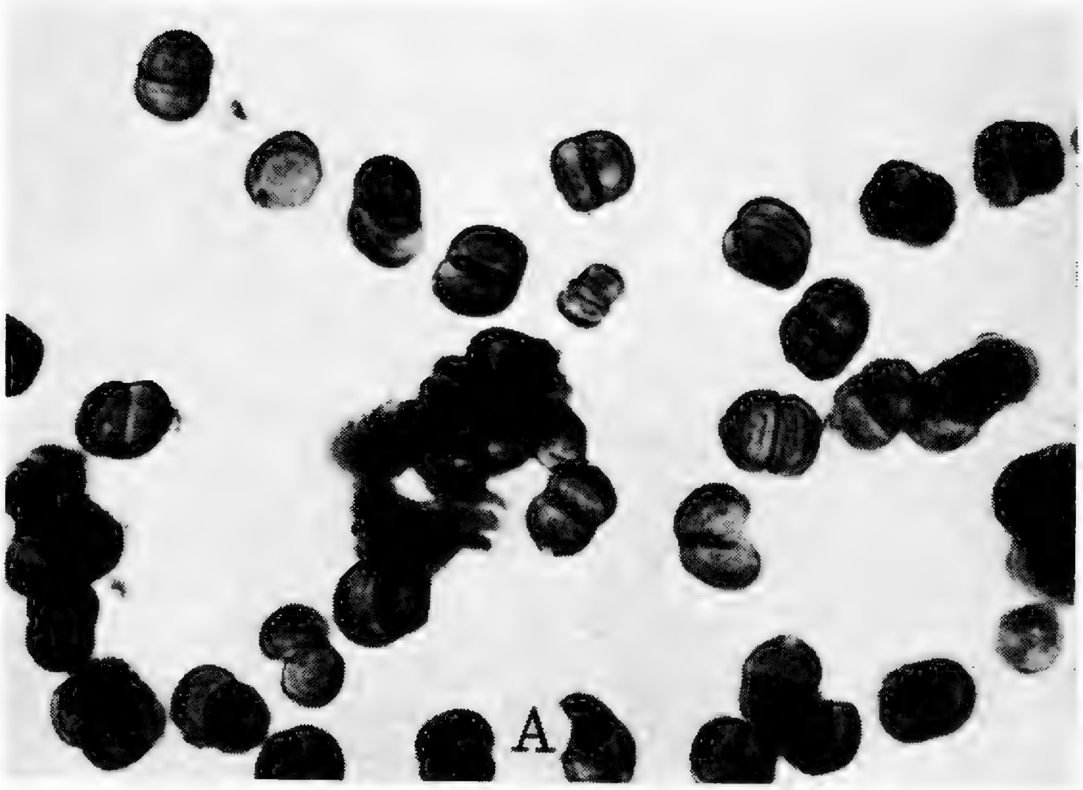


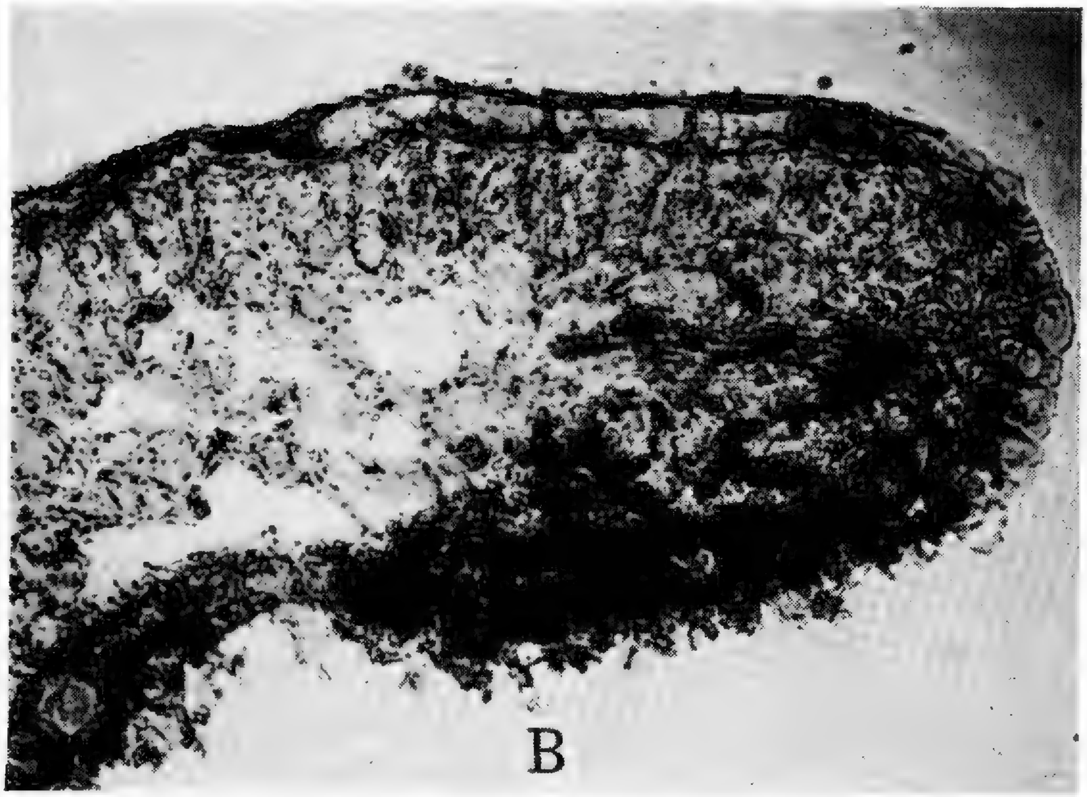
PLATE XVIII

Figure A. *Schizonella melanogramma* (DC.) Schröter. Photograph to illustrate the rust-like character of the spores, which is emphasized by the occasional short pedicel and the apical pore. 700 x.

Figure B. *Exobasidium angustisporum* n. sp. A section through the hypertrophied leaf of *Arctostaphylos alpina* (L.) Spreng. The fungal hyphæ penetrate the entire infected area and aggregate under the so-called hymenial layer. 175 x.

Plate XVIII





5. LICHENES

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Professor, Universitetets Farmasøitisk Institutt, Oslo, Norway

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INTRODUCTION

During the Canadian Eastern Arctic Expeditions of 1934 and 1936 Dr. Nicholas Polunin, who had already had some experience in the region in 1931, collected a large number of lichens, which he entrusted to me for identification. These lichen samples were gathered at the following points, which are classified according to the major geographical district in which they are situated—cf. p. 1:

1. ELLESMERE: Craig Harbour.
2. DEVON, ETC., ISLANDS: Dundas Harbour.
3. N. BAFFIN: Pond Inlet, Arctic Bay.
4. C. BAFFIN: Clyde, Pangnirtung.
5. S. BAFFIN: Lake Harbour, Cape Dorset.
7. N. LABRADOR: Burwell.
8. N. QUEBEC: Diana Bay and Payne Bay (Ney and Courtright), Wakeham Bay, Sugluk, Wolstenholme, Cape Smith.
9. ISLANDS IN HUDSON, ETC., BAYS: Mansel Island (Leechman), South Bay in Southampton Island.
10. W. COAST HUDSON BAY: Chesterfield.

Subarctic regions: Hebron, Cartwright, Fort Chimo (Ney and Courtright), Port Harrison, Baker Lake (Dutilly), Churchill. The vast majority of the specimens were gathered by Dr. Polunin himself, but a few were brought in by others, whose names are given in brackets.

The 1934 collection was returned to Dr. Polunin after determination. It has been acquired by the British Museum of Natural History. The 1936 collection was mostly presented by Dr. Polunin to the Farlow Herbarium, Harvard University, who mounted and labelled the specimens in a most satisfactory manner. A good set of duplicates is to be seen in the Botanical Museum, Oslo, and others are being retained by Dr. Polunin for Oxford University.

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† Died Jan. 28, 1942; the proofs of his contribution have been read by his assistant Eilif Dahl of Oslo, and friend and collaborator Dr. I. M. Lamb of the British Museum, to both of whom my sincere thanks are due. (N.P., November 1946.)

I will now give an outline of the lichenological exploration of the Canadian Eastern Arctic and some adjacent regions. This "outline", and also the bibliography, will cover an area that is considerably more extensive than that defined by Dr. Polunin for the present "Botany of the Canadian Eastern Arctic". Thus it embraces Labrador (but not Newfoundland), all the shores of Hudson Bay, and all the islands lying north of the American continent and west of Greenland. My reason for thus extending my task is that, for the study of an area that is as yet so insufficiently explored as the Canadian Eastern Arctic, it is of the greatest importance to know as much as possible about the flora of the adjacent regions. Especially does this tell us much about the plants that we might expect to find in our own proper area, and thus facilitate further exploration.

No effort has been spared to find and cite every publication on the lichens of this area. I am indebted to several institutions for the loan of works not found in my own library; first of all to the University Library of Oslo, and to the Norges Svalbard- og Ishavs-Undersøkelser. The library of the latter institution (leader, Dr. Adolf Hoel) is exceptionally rich in arctic literature. A few old books, not accessible to me here, were lent by the Botanical Museum of Copenhagen; and some information was procured by Dr. Polunin from British libraries. I am glad to express my profound gratitude to these institutions and friends for their valuable help, without which I could not have fulfilled my task.

The first contribution to the lichen flora of Eastern Arctic Canada of which I know is that in John Ross's "A Voyage of Discovery . . . for the purpose of exploring Baffin's Bay". It has a "Botanical Appendix" by Robert Brown (1819, pp. cxxxvii-cxliv), which is subheaded "List of Plants, collected on the coasts of Baffin's Bay, from lat. 70° 30′ to 76° 12′, on the East Side; and at Possession Bay, in lat. 73°, on the West Side". On page cxliv there are listed 9 lichens, but as proper localities are lacking the species cannot be cited individually.

Captain Parry's famed "First Voyage" (cf. Brown 1824) was to Melville Island, which lies outside the scope of the present work, but during Parry's "Second Voyage" some lichens were collected in our area. The principal herbarium was on this occasion apparently accumulated by Parry himself, and another was made by a surgeon, Mr. Edwards, and others of smaller size by other members of the expedition. The lichens were chiefly collected on Melville Peninsula; the main collections now belong to the British Museum and to the University of Edinburgh. Mr. I. Lamb, of the British Museum, has been kind enough to send me a list of 10 lichens from this expedition, determined by him.

During Parry's "Third Voyage" a few lichens were collected by Lieut. J. C. Ross at Port Bowen, lat. 73° 15′ N. long. 89° W., and on Whale Fish Islands, which lie on the Greenland side of Davis Strait, 4 days' sailing south of Disko (cf. W. J. Hooker 1826).

Ernst Meyer's paper of 1830 enumerated 17 common lichens, collected at Okak in Labrador by a Moravian brother. Schlechtendahl's publication of 1835-6 is evidently only a translation of Meyer's; he mentions the same lichens.

Churchill Babington's paper of 1852 is unimportant. He enumerated a few lichens, collected on Cornwallis Island and in Prince Alfred Bay, Banks Land. There are also a few lichens from Cape York in Greenland. Some of the plants are without localities, and in other cases the determinations are either given as uncertain or look very improbable. I have only found it possible to make use of a few of these reports.

On the basis of specimens collected by a Dr. Walker in 1857-8, J. D. Hooker (1861) gives a list of lichens, including many from Port Kennedy in Somerset Island. There are also some records from Cape Osborne on Devon Island.

Hind's "Explorations" (1863) are of little interest to us. The book is a popular account, without any list of species but with some notes on the use of lichens as food for animals (Dr. Polunin *in litt.;* I have not seen the work myself).

James's paper (cf. 1864) on lichens from Smith Sound is one of the least valuable of all the reports on the lichens of the Canadian Eastern Arctic. He enumerated 23 lichens, without special localities. The determinations were severely criticized by Th. Fries (cf. 1879), and certainly with good reason. It was a pure waste of paper to translate James's effort in Petermanns Mittheilungen the same year (1864).

Leighton's contribution of 1867 only contains a few records from York Factory, Hudson Bay. The greater part of his material was collected far to the west of our area (Great Bear Lake, Great Slave Lake, etc.).

Dickie's paper of 1869 on lichens from Davis Strait was, perhaps, the most important publication on the theme up to that time. He enumerated 56 lichens, nearly all of them common species. The lichens were collected by Mr. James Taylor in 1856-61. In some cases the determinations look improbable.

Dickie's paper of 1871 on the lichens collected in the Lancaster Sound region[1] by Dr. E. P. Philpotts[2] contained 31 species, all of them common.

Next we come to the first really important publication, Th. Fries's of 1879. Among the preceding authors we find some prominent botanists, but more amateurs of no great lichenological knowledge, and but one lichenologist who only just touched on the area. It is unnecessary to comment on the quality of a work by the famous Swedish lichenologist Theodor Magnus Fries, Professor Linneanus Upsaliensis. The expedition that supplied Fries with material was the English one under the command of Capt. G. S. Nares (cf. 1878), who had two ships, *Alert* and *Discovery,* at his disposal. The expedition worked principally in Ellesmere Land, Grinnell Land, and Grant Land,[3] some visits being made also to the adjacent shores of Greenland. The collections were due to Capt. H. W. Feilden (*Alert*), the well-known arctic traveller, and to Mr. H. C. Hart (*Discovery*). The collections are very valuable, on account of their size as well as of the high latitudes from which they came. Fries identified in them 102 specimens of lichens, several of which were new to science.

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[1] Actually the plants came from "Philpots Island", to which I have, accordingly, transferred the records. (N.P.)

[2] So spelled by Dickie (1871, p. 32), in contrast with the usual spelling on maps and on herbarium sheets in the Fielding Herbarium at Oxford. (N.P.)

[3] These three ill-defined tracts are now of course known collectively as "Ellesmere Island". (N.P.)

During the Howgate Polar Expedition in 1877-8 some lichens were collected in Cumberland Sound. They were determined by the eminent American lichenologist Edward Tuckerman (1879), who identified 29 different species.

During the Lady Franklin Bay Expedition of 1881-4 a few lichens were collected in northern Ellesmere. The interest of this small collection lies in the high latitude from which it came. The lichens were determined by the Rev. E. Lehnert (cf. Lehnert and Greely 1886), being republished 2 years later in an appendix to the "United States Expedition to Lady Franklin Bay, Grinnell Land" (Lehnert and Greely 1888, p. 18). Only 7 lichens were enumerated.

The German party that visited Kingua Fiord and elsewhere during an International Polar Year expedition collected a number of common lichens, which were subsequently identified by B. Stein (cf. 1890). It should be noted here that in Lindau and Sydow, Thesaurus, etc., there is mentioned (vol. IV, p. 136 (1915)), under the heading "Grönland, Arktisches Amerika", "18513 Müller, J. *Lichenes arctici*". But this is erroneous, for Müller's paper only concerns Antarctic lichens, collected in South Georgia by the German expedition of the "Internationale Polarforschung".

In 1895 there appeared a paper by John W. Eckfeldt on the lichens of Newfoundland and Labrador. It contains a list of "all authenticated lichens that are to be found in the much unexplored regions of Newfoundland and Labrador". The field work was done by the Rev. A. C. Waghorne and the determinations were made under the supervision of Mr. Eckfeldt, a number of the more difficult species having been under the observation of Dr. F. Arnold, of Munich, and Dr. J. Hulting of Norrköping (cf. Hulting 1896). Most of the lichens were from the following localities in (1) *Newfoundland:* Trinity Bay, Notre Dame Bay, and a few from White Bay, "further north from Placentia Bay to the Labrador", and (2) *Labrador:* Straits of Belle Isle, and "along the coast from Battle Harbor north to Seal Islands, and thence about Sandwich and Gross Waters to Hamilton Inlet". All of these localities are far to the south of our Eastern Arctic area. Nevertheless, it is much to be regretted that Mr. Eckfeldt entirely neglected the interests of plant geography in this publication, which is so important from other points of view. There is not a single locality mentioned for any plant, not even for the new species! Neither does he distinguish between the plants from Labrador and those from Newfoundland. I have, therefore, found it impossible to quote the paper for our present purpose.

Mr. Wetherill's "List of Plants Obtained on the Peary Auxiliary Expedition", also published in 1895, is not accessible to me here. Dr. Polunin, writing from Oxford, states "not available here, but I know that the paper is a small and unimportant one and the list is largely of phanerogams".

As stated above, some of the Rev. A. C. Waghorne's lichens were submitted to the Swedish lichenologist Dr. J. Hulting, who (in 1896) enumerated 29 species from Newfoundland and Labrador—again most unfortunately without any statement of localities.

Other parts of these collections were determined by the eminent German lichenologist Dr. F. Arnold. In his paper of 1896 he recorded 124 species + 3 lichen parasites. Arnold's paper is, perhaps, the most important one on the lichens of Labrador; there are a great number of interesting species, many valuable notes, and localities are given.

In 1902 the American lichenologist Clara E. Cummings reported on the lichens of the Brown-Harvard expedition to Labrador, listing in all 43 species and varieties, chiefly common Fruticulose and Foliaceous forms. A few of her records had been drawn from previous literature.

In the same year John Macoun published Part VII of his well-known "Catalogue of Canadian Plants", containing 614 lichens from Canada, many of them from Labrador and the Eastern Arctic. Macoun had been able to locate several of Waghorne's plants, enumerated by Eckfeldt, but still a great number of them were only recorded from "Labrador and Newfoundland".[1]

In the Kew bulletin of 1907 there appeared an anonymous paper on 23 lichens, chiefly Fruticulose and Foliaceous forms, collected by Sir William MacGregor on Chidley Peninsula, the northern promontory of Labrador, in 1905, and at Anse Sablon, southern Labrador, a year later. Some lichens were also due to two Moravian brethren, who had collected in the vicinity of Nain and Hopedale. The lichens were determined by Mr. A. D. Cotton; the main collection belongs to the Museum at St. John's, Newfoundland, but a few specimens are in the Kew Herbarium.[2]

During the Norwegian *Gjøa* Expedition, under the command of Capt. Roald Amundsen, which in 1903-7 went through the North-West Passage, some lichens were collected by the cook, Henrik Adolf Lindstrøm, who was much interested in botany. He brought home 37 different species of lichens, a few of which were collected in the vicinity of Gjøa Harbour; the greater part, however, came from much farther to the west, and quite outside the area of the present paper. The lichens were determined by me (Lynge 1921).

For my paper on *Dufourea* and *Dactylina* (Lynge 1933) I collected all available information, published or otherwise, on the distribution of the 3 species *Dactylina arctica, D. madreporiformis,* and *D. ramulosa.* There were numerous citations from the Canadian Eastern Arctic.

In 1931, as an undergraduate of Christ Church, Oxford, Nicholas Polunin was on the expedition of the University Exploration Club to Akpatok Island in the mouth of Ungava Bay. He made quite a large collection of lichens, and was happy enough to get them identified by Miss A. Lorrain Smith, who enumerated about 35 species (Smith 1934).

The Danish "Fifth Thule Expedition" of 1921-4, under the command of Dr. Knud Rasmussen, spent much time in the western Hudson Bay region and in the adjoining peninsulas and islands to the north. There was no botanist on the expedition, but several of the members made botanical collections, which included a considerable bulk of lichen material. This was entrusted to me for identification, and in it I succeeded in finding 99 different species (Lynge 1935).

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[1] Macoun also published proper localities for many of the lichens collected and ambiguously reported by Bell (cf. Annual Report for 1898, Geol. Surv., Canada, pt. M, p. 37). (N.P.)

[2] In 1906 a German naturalist, B. Hantzsch, collected 7 species of lichens at or near Port Burwell in northernmost Labrador. These were named by Dr. A. Zahlbruckner (cf. Hantzsch 1909, p. 220) and so I have taken the liberty of inserting them in this paper. (N.P.)

In a recent paper on North American Lecideae, the Swedish lichenologist Dr. A. H. Magnusson has also given valuable information on some species from the present region (cf. Magnusson 1936).[1]

In the above "outline" no mention has been made of the greatest and most important lichen collection that has ever been brought home from the Canadian Eastern Arctic, viz., that of the Second Norwegian Arctic Expedition in the *Fram,* 1898-1902. The expedition had its chief field of exploration in and about Ellesmere Island, and its results were remarkable in many respects, as is well known. The Swedish Dr. H. G. Simmons went as botanist. His work was of a high quality as is seen from his collection of lichens, as well as from his vascular plants (determined by himself), and his mosses (determined by Dr. N. Bryhn).

This beautiful collection of lichens was sent for determination to the late Professor O. V. Darbishire (cf. 1909), who, working against heavy difficulties, unfortunately did not succeed in his work. Indeed it must be said that his publication is the worst in all the literature on arctic lichens. Reliable determinations are few and long between. The whole work must be remade, and I hope that I shall find time to do it. It has had to be left entirely out of consideration for the present purpose, and indeed should certainly not be used as a basis for such consideration.

Hoc opus oblivioni tradendum est!

It is much to be regretted that a great number of duplicates were distributed, with Dr. Darbishire's determinations, before we became aware of their value. Institutions that have received them would do well to return them to me for renewed identification.[2]

It is evident from the above "outline" that our knowledge of the lichen flora of the Canadian Eastern Arctic must of necessity be very unsatisfactory. Collections of 20-50 common species, brought home by untrained collectors, often determined by amateurs, do not tell us much of the lichen flora of an area that is so immense as the Canadian Eastern Arctic.

So much the more valuable was this very great material collected by Dr. Nicholas Polunin. He is a well-known arctic traveller and botanist, capable of conquering all the difficulties and hardships that he has met during his extensive travels, and in 1934 and 1936 he accompanied Canadian Eastern Arctic Expeditions into our area, as outlined on p. 298. There were 166 different species of lichens in his 1934-6 collection, which is the greatest one ever received from Arctic Canada, with the exception only of Simmons's. Nevertheless, the number of Crustaceous forms leaves much to be desired—there were for instance only 20 species of *Lecidea,* a genus that should have numbered at least 100 species in this region. But the Fruticulose and Foliaceous lichens were much better represented; they are numerous enough to be fairly representative of the area, even if we know that they are far from exhaustive.

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[1] Recently, too, Mrs. Lucy M. Raup (1936) has reported 24 different lichens as having been collected by Dr. G. M. Sutton on Southampton Island. I have taken the liberty of inserting these reports in the text. (N.P.)

[2] One hopes that this generous offer of Professor Lynge's will not pass unnoticed. Now that we lament his death it is comforting to note that the work which he loved and made his own continues, with ardent disciples in, particularly, Oslo and London available to implement this offer. (N.P., October 1946.)

But large though Dr. Polunin's collection is, it only brings before our eyes the fact that the lichenological investigation of Arctic Canada is still much behind that of Greenland and Spitsbergen, and that an immense amount of work must yet be done before our knowledge can be deemed really satisfactory. May this contribution, and also the bibliographical references, arouse the interest of travellers and facilitate their work!

In the Systematic Part, which follows, I have, with few exceptions, followed Zahlbruckner's arrangement of the genera in Engler-Prantl "Die natürlichen Pflanzenfamilien", 1926. Extensive, though not always critical, literary references are found in Zahlbruckner's "Catalogus lichenum universalis", vols. I-IX (1922-34). It was, therefore, thought unnecessary to reprint these references, except in some critical or otherwise interesting cases. General statements of distribution are also found in Zahlbruckner's *Catalogus*. More detailed information on the distribution of individual species in the Arctic is found throughout the great literature on this subject. I felt it impossible to state more exactly the "general distribution" of each species in the present paper. It would have required an immense amount of work to dig out all this information from the whole literature, which is, moreover, of a very unequal value.

May I, therefore, be allowed to refer to some of my own papers on the subject.[1] They are the newest ones, and several of them are based on very large collections. They also contain many notes on previous collections from our area, which it is unnecessary to reprint here. The most important of these publications are:

West Greenland: "Lichens from West Greenland, collected chiefly by Th. M. Fries"; Medd. om Grønland, vol. CXVIII, No. 8, pp. 1-225, X plates (København 1937).

East Greenland: (1) Lynge and Scholander: "Lichens from North East Greenland"; Skr. om Svalbard og Ishavet, No. 41, pp. 1-116, VI plates (Oslo 1932).

(2) Dahl, Lynge, and Scholander: "Lichens from Southeast Greenland"; Skr. om Svalbard og Ishavet, No. 70, pp. 1-76 (Oslo 1937).

Svalbard: (1) "Lichens from the West and North Coasts of Spitsbergen and the North-East Land . . . I. The Macrolichens"; Norske Vid.-Akad. Skr. I. Math.-Naturv. Kl. 1938, No. 6, pp. 1-136, XIV plates (Oslo 1938).

(2) "Lichens from Bear Island (Bjørnøya)"; Res. Norske Statsunderst. Spitsbergeneksp., vol. I, No. 9, pp. 1-78, II plates (Oslo 1926).

Franz Josef Land and Novaya Zemlya: (1) "Lichens" (from Franz Josef Land); Skr. om Svalbard og Ishavet, No. 38, pp. 1-31, II plates (Oslo 1931).

(2) "Lichens from Novaya Zemlya"; Rept. Sci. Res. Norw. Exped. to N.Z. 1921, No. 43, pp. 1-299, XIII plates (Oslo 1928).

Farther to the east the most important collections are due to the Vega expeditions, the lichens of which have been described by Nylander and Vainio in the following publications:

Nylander, W.: "Enumeratio lichenum freti Behringii"; Bull. Soc. Linn. Normandie, IV, sér. I, pp. 198-286 (1887).

Vainio, Edv. A.: "Lichenes in viciniis stationis hibernae . . . prope pagum Pitlekai . . ."; Arkiv f. Botanik, vol. VIII, No. 4, pp. 1-175 (Uppsala and Stockholm 1909).[2]

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[1] Like the previous paragraph, Prof. Lynge added this section at my special request. I felt that, in his extreme modesty, he had omitted to mention several of his best papers, which on one hand make good the difference in arrangement between this and the other cryptogam contributions, and on the other have made him the greatest living authority on arctic lichens. (N.P.)

[2] Two more important papers by Lynge on arctic lichens have appeared since this manuscript was finished, viz.: "Lichens from North East Greenland collected on the Norwegian Scientific Expeditions in 1929 and 1930. II. Microlichens"; *Skr. om Svalbard og Ishavet*, No. 81, pp. 1-143 and plates (Oslo 1940); and "Lichens from Iceland collected by Norwegian Botanists in 1937 and 1939. I. Macrolichens"; *Norske Vid.-Akad. Skr. I. Math.-Naturv. Kl. 1940*, No. 7, Oslo. (E. Dahl, October 1946).

The following enumeration, when concerning lichens previously recorded from the area (as opposed to those reported on my own authority as occurring in Dr. Polunin's 1934 and 1936 collections[1]), is almost entirely bibliographical. With the exception of a few from Polunin's collection made in 1931 on Akpatok Island, I have been able to revise hardly any of the specimens on which the literature records are based. A few of the reports have been omitted on the ground that they seemed too improbable; one does not expect to find palms growing in Ellesmere! Some doubtful records, again, are marked with a "?".

The 26 families represented in the systematic part of this contribution are dealt with in the following order:

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SYSTEMATIC PART[2]

VERRUCARIACEAE

1. **Verrucaria** cf. **devergens** Nyl., in Norrlin, Flora Karel. Onegensis II, p. 39 (1876); Vainio, Lich. Fenn. I, p. 45 (*ubi syn.*) (1921); Lynge, Lich. Nov. Zemlya, p. 14 (1928); Zschacke, Verrucariaceae, in Rabenh. Krypt.-Flora IX, Abt. 1, p. 94 (1934).

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[1] By Professor Lynge generally spoken of together as "the collection". (N.P.)

[2] The arrangement, etc., of data in this Systematic Part differs considerably from that followed in the other papers belonging to the series, the paper having arrived too late for the revision needed to procure uniformity. The most conspicuous points of difference are: (1) usual omission of the literature citation of each species and form, and of synonyms, because of recent publications that give all such information—cf. p. 304; (2) omission of the "general distribution" of each species—cf. p. 304; (3) frequent separation by a general discussion of the older (from literature) and the new (from my 1934 and 1936 collections) records, the latter being cited immediately after the species-heading; (4) omission of collectors' names and dates and, most unfortunately, of collection numbers—in all except a few instances that I have been able to fill in through the kind offices of Dr. Linder; (5) relegation to mere brief mention (in an alphabetical arrangement at the end of the genus) of species that have been reported from the area or near, but were not collected by me in 1934 or 1936—those that occur in our Eastern Arctic area have been given numbers; (6) extension of the area from which specimens are cited, to include the whole of Labrador and the Ungava and Hudson Bay regions, as well as much of what is generally considered as belonging to the Canadian Western Arctic; and (7) mere haphazard statement of localities without arrangement into geographical subdivisions (in these circumstances it has been deemed undesirable to italicize the names of districts, but it should be noted that whereas the names of localities within the same major district are separated by commas, the representatives of different major districts are separated by semi-colons). For phytogeographical use of the present paper, and for the sake of comparison with others in the series, continual reference will have to be made to the list of localities given on page 298 and to the summary (pp. 532 *et seq.*) in which I have attempted to gather together all the records for each species under the usual ten geographical districts. (N.P.)

Dundas Harbour—very scarce on calcareous rocks.

There is no visible thallus. The globular perithecia are small, 0·3-0·4 mm. in diameter, semi-immersed, with a prominent vertex, ostiolum not impressed. When shed, the perithecia leave semiglobular pits in the rocks. The excipulum is entirely carbonaceous. The spores were very scarce, but I detected a few ripe and good ones about 30-32 x 15μ in size. The nucleus is stained wine-red with J; it is rich in oil, as are also the spores, which accordingly may look uni-septate. I can see no difference between this and my Novaya Zemlya plants, the determination of which was acknowledged by Vainio. There are very few Amphoridia with semi-immersed perithecia. *Verrucaria deversa* Vain. has smaller spores, 15-20 x 7-10μ.

A plant from South Bay in Southampton Island may possibly belong here, but its spores are smaller (25-30 up to 33μ long).

2. **Verrucaria maura** Wahlenb.

var. **striatula** Hoffm.

"Smith's Sound" (James 1864, p. 96).

Verrucaria nigrescens Pers. Labrador: Capstan Island (Arnold 1896, p. 17).

3. **Verrucaria obsoleta** Lynge

Akpatok Island (Smith 1934, p. 202).

4. **Verrucaria phaeothelena** Th. Fr.

Grant Land: Floeberg Beach (Fries 1879, p. 366).

"*Verrucaria popularis* Flk." Reported from Grinnell Land by James (1864, p. 96). This is evidently a misprint for *Verrucaria papillosa* Flk. (*Verrucaria floerkeana* Dalla Torre & Sarnth.) The record is supposed to be uncertain and should, perhaps, be cancelled (cf. Fries 1879, p. 346).

Verrucaria rupestris Schrad. Labrador: L'Anse au Mort (Arnold 1896, p. 17).

Thelidium Mass. No member of this genus was found in Dr. Polunin's collections, nor has any been reported from the Canadian Eastern Arctic, but *Thelidium decipiens* Hepp has been recorded from Labrador: L'Anse au Mort (Arnold 1896, p. 17).

5. **Polyblastia hyperborea** Th. Fr.

South Bay in Southampton Island (2294a-4); Cape Dorset—in both places on calcareous rocks.[1]

Thallus subevanescens, obscure cinereus, fere nigricans. Perithecia diam. 0·35-0·42 mm., basi solum substrato immersa, vertice libera, excipulum integre fuligineum, amphithecia crasso tectum. Sporae incoloratae, murales, multiseptatae, (25-)27-35 x 15-18μ.

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[1] In the Farlow Herbarium is a specimen (Polunin No. 2381a-27) collected at Cape Dorset in 1936 that bears the caption "*Polyblastia cf. integrascens* (Nyl.) Vain. *det.* B. Lynge". It appears that Prof. Lynge later revised this identification, and that the present report of *P. hyperborea* from Cape Dorset is founded upon this same plant. (N.P.)

The determination of some arctic Polyblastiae is an intricate question. It seems certain that the present plants belong to the *Polyblastia intercedens* section. According to Vainio (Lich. Fenn. I, p. 105) the present species is to be distinguished by the pale base of the excipulum, which is undoubtedly a good character. It should, however, be borne in mind that most probably it is only in the early stages that the excipulum base is pale. I have not access to the type plant of Th. Fries, but my Swedish colleague, Dr. Santesson, who has devoted a particular study to Pyrenocarpous lichens, is of the opinion that the final colour in *Polyblastia hyperborea* is black. *Polyblastia integrascens* Nyl. also has "apotheciis pyrenio integro", i.e., a black excipulum (Nylander, Lich. Fret. Behr., p. 237 (1888)), which agrees with the present plants. But this species has a well-developed thallus.[1]

The units of the *intercedens* section are much in need of a monographic study; at present I can give no more than the above remarks. However, it may be recommended to embed a perithecium in paraffin with the aid of a hot needle, under a good lens. This ensures the correct orientation, and it is not difficult to cut sufficiently thin sections with a razor. The colours can quite well be studied without removing the paraffin. It is not recommended to section the plant directly with a scalpel, for it is difficult to get the section sufficiently thin, and the lower part of the perithecium is easily lost.

Polyblastia hyperborea has previously been recorded from Labrador: L'Anse au Mort (Arnold 1896, p. 16); and Baker Lake (Lynge 1935, p. 9).

6. **Polyblastia bryophila** Lönnr.

Grant Land: Winter quarters of *Alert*[2] and *Discovery*[3] (Fries 1879, p. 366).

7. **Polyblastia intercedens** (Nyl.) Lönnr.

Akpatok Island (Smith 1934, p. 202).

Northern Ellesmere: Floeberg Beach and Dobbin Bay (Fries 1879, p. 366). This may possibly be the same as *Polyblastia hyperborea* in the present collection and so must be queried.

8. **Polyblastia sommerfeltii** Lynge

Akpatok Island (Smith 1934, p. 202).

Polyblastia theleodes (Sommerf.) Th. Fr. Labrador: L'Anse au Mort (Arnold 1896, p. 17). There is every reason to expect this plant farther north. Indeed it was reported from southern Ellesmere by Darbishire in his paper on the lichens of the Second Norwegian Arctic Expedition in the *Fram*. Unfortunately this does not prove anything, and the plant was lacking in the collection when it was returned to us.

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[1] There is also a specimen in the Farlow Herbarium whose number (1096a-10) indicates that it was collected by me at Port Burwell, July 23-5, 1936. It was determined by Prof. Lynge and, being confirmed by a duplicate in Herb. Oslo labelled "Port Burwell July 23-5, 1936, No. 1096a-10" (according to Dahl, *in litt.*) is given as a definite report in the summary. Mr. Dahl also informs me *(in litt.)* that "In the Oslo Herbarium there is a specimen from Cap[e] Dorset which at first by Lynge was determined *P.* cf. *integrascens*, but the determination has been altered by Lynge to *P. hyperborea*". (N.P., November 1946.)

[2] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[3] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

9. **Staurothele** sp.[1]

Known only from Akpatok Island (Polunin ex Smith 1934, p. 202, sub nom. *Rhizocarpon confervoides*. *See* below, p. 323).

10. **Microglaena sordidula** Th. Fr.

No member of this genus was found in Dr. Polunin's collection, but the present species has been recorded from Grant Land: Discovery Bay (Fries 1879, p. 366).

Dermatocarpaceae

11. **Dermatocarpon polyphyllum** (Wulf.) Dalla Torre & Sarnth.

Dundas Harbour.

Unfortunately the perithecia contained no ripe spores, so the identification is not quite certain. But the habit agrees so well with this species that I think the determination very probable.

Pyrenulaceae

12. **Microthelia melanostigma** Th. Fr.

No member of this genus was found in the present collection, but *M. melanostigma* has been recorded from Grant Land: Floeberg Beach (Fries 1879, p. 368).

Sphaerophoraceae

13. **Sphaerophorus fragilis** (L.) Pers.

Wolstenholme, Wakeham Bay; Burwell; Lake Harbour; Pangnirtung, Clyde.[2]

It is well known that arctic conditions impress the species of *Sphaerophorus* with a very similar habit. In the present collection all doubtful plants were tested with J. Whether all previous authors were familiar with this necessity is unknown to me. Arctic records of these three species should be accepted with some reserve, although the present one cannot be rare in the Canadian Eastern Arctic.

Previously recorded from the west coast of Hudson Bay and from Melville Peninsula (Lynge 1935, p. 9), Igloolik (Hooker 1825, p. 425); C. Baffin: Kivitung and Kekerten (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 168); Southampton Island (Sutton ex Raup 1936, p. 5).[2]

14. **Sphaerophorus globosus** (Huds.) Vain.

Churchill; South Bay in Southampton Island; Wakeham Bay, Wolstenholme; Burwell; Cartwright; Cape Dorset *c.fr.*; Pangnirtung, Clyde; Pond Inlet; Dundas Harbour; Craig Harbour.

Previously recorded from Labrador: Long Island and L'Anse au Loup (Arnold 1896, p. 4), Mount Faunce and Brig Harbour (Cummings 1902, p. 199); "West side of Davis Strait, frequent" (Dickie 1869, p. 465); Kirchoffer River in Southampton Island (Mathiassen ex Lynge 1935, p. 9), Akpatok Island (Smith 1934, p. 202); Philpots Island (Dickie 1871, p. 34), Port Kennedy (Hooker 1861, p. 87); West Coast of Hudson Bay (Lynge 1935, p. 9).

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[1] This is *Staurothele fuscocuprea*, *sensu* Lynge (1937, p. 18). *See* also *Rhizocarpon confervoides* (p. 323). (N.P.)

[2] Concerning methods of citation in this paper, *See* footnote (2) on page 305.

The number of well established finds is sufficient to prove this species to be as common in our area as it is elsewhere in the Arctic.

Sphaerophorus melanocarpus (Sw.) DC. (Syn. *S. compressus* Ach.) has been recorded from Akpatok Island (Smith 1934, p. 202), and from three localities on the shores of Hudson Strait (Macoun 1902, p. 171). To judge from its distribution in Norway these records seem improbable, for in Norway it is distinctly a southern species.

GRAPHIDACEAE

Xylographa Fr. No member of the genus was found in the present collection, but *Xylographa abietina* (Pers.) Zahlbr. (Syn. *X. parallela* Ach.) has been recorded from Labrador: Forteau and Capstan Island (Arnold 1896, p. 17).

Opegrapha Humb. No *Opegrapha* was found in the present collection, but *O. saxicola* Ach. has been recorded from Labrador: L'Anse au Mort (Arnold 1896, p. 17).

CHRYSOTHRICACEAE

15. **Crocynia neglecta** (Nyl.) Hue

Clyde.

There is no previous record of this species from the region, but there is every reason to believe that it has been extensively overlooked; it is very common in most other arctic lands.

DIPLOSCHISTACEAE

16. **Diploschistes scruposus** (L.) Norm.

This has been recorded from Somerset Island: Port Kennedy (Hooker 1861, p. 87). It was not found in the present collection.

LECANACTIDACEAE

Catinaria athallina (Hepp) Lynge has been reported, although with doubt, from Baker Lake, which lies to the west of Hudson Bay (Lynge 1935, p. 10).

GYALECTACEAE

17. **Ionaspis epulotica** (Ach.) Th. Fr.

South Bay in Southampton Island—very scarce on a calcareous rock. Hymenium incoloratum, sporae indivisae, incoloratae, 15-17 x 10μ.

18. **Gyalecta peziza** (Mont.) Anzi

This has been recorded from Ellesmere Island: Hayes Sound (Fries 1879, p. 367).

COLLEMACEAE

19. **Collema arcticum** Lynge, Lich. Bear Island, p. 45 (1926).

Lake Harbour—very scarce.

20. **Collema furvum** (Ach.) DC.

This has been recorded from Labrador: L'Anse au Mort (Macoun 1902, p. 97); Somerset Island: Port Kennedy (Hooker 1861, p. 87).

21. **Collema pulposum** (Bernh.) Ach.

This has been recorded from Grant Land: Floeberg Beach (Fries 1879, p. 367); it is most probably to be found all over the region.

Leptogium (S. Gray) Zahlbr. Curiously enough no *Leptogium* was found in the present collection, but two species have been recorded from the region, viz.:

22. **Leptogium schraderi** Bernh.

This is known only from Grant Land: Winter quarters of the *Alert*[1] (Fries 1879, p. 367); and

23. **Leptogium tenuissimum** (Dicks.) Fr.

Also known only from Grant Land: Dean Mountain (Fries 1879, p. 367, sub syn. *L. tetrasporum*).

PANNARIACEAE

24. **Placynthium asperellum** (Ach.) Trev.

Arctic Bay; Dundas Harbour.

Previously recorded from Akpatok Island (Smith 1934, p. 202); and Grant Land: Floeberg Beach (Fries 1879, p. 367).

This species is common and widespread elsewhere in the Arctic, and there is every reason to suppose that it should be common also in the Canadian Eastern Arctic.

Parmeliella Müll. Arg. Babington (1852, p. 277) reports "*Parmelia triptophylla* var. *Schraderi*" from Assistance Bay in Cornwallis Island. That it should occur there is most improbable.

Parmeliella waghornei (Eckf.) Zahlbr. has been recorded from Labrador: Capstan Island (Arnold 1896, p. 7).

Pannaria Del. *P. pezizoides* (Web.) Lightf. has been recorded from several places in Labrador: Capstan Cove (Hulting 1896, p. 190) Seal Lake, Battle Harbour, Western Cove, and L'Anse au Mort (Arnold 1896, p. 7). It may be expected in the Canadian Eastern Arctic.

25. **Psoroma hypnorum** (Dicks.) Hoffm.

Burwell; Lake Harbour; Pond Inlet.

Previously recorded from Labrador: L'Anse au Mort (Hulting 1896, p. 188), Battle Harbour, Packs Harbour, Fox Cove, and Seal Island (Arnold 1896, p. 7), Venison Tickle (Macoun 1902, p. 92); C. Baffin: Cape Adair and Cape Searle (Dickie 1869, p. 467), Kivitung (Stein 1890, p. 99, sub nom. *Psoroma femsjonensis*), "Cumberland Sound" (Tuckerman 1897, p. 167).

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

There are so many well established finds of this from the Canadian Eastern Arctic, as well as from the adjacent regions, that we must suppose it to be as frequent here as in other arctic and subarctic lands.

STICTACEAE

26. **Lobaria linita** (Ach.) Rabenh.

Chesterfield.

I have found no other records of this species from our region, although it should be looked for elsewhere as it is otherwise fairly common in the Arctic. Several other species of *Lobaria* have been found in Labrador, viz.:

Lobaria amplissima (Scop.) Forss. "Labrador" (Macoun 1902, p. 82, sub syn. *Sticta amplissima* (Scop.) Mass.).

Lobaria laetevirens (Lightf.) Zahlbr. "Labrador" (Macoun 1902, p. 83, sub syn. *Sticta herbacea* (Huds.) Ach.).

Lobaria pulmonaria (L.) Hoffm. Labrador; L'Anse au Mort (Macoun 1902, p. 83).

Lobaria scrobiculata (Scop.) DC. Labrador (Macoun 1902, p. 85, sub syn. *Sticta scrobiculata* (Scop.) Ach.).

27. **Sticta arctica** Degel., Medd. från Göteborgs Botan. Trädgård, XII, p. 108, Pl. I, b (1937).

Pond Inlet; scarce.

It was most unexpected to find a *Sticta* so far to the north. Degelius described this one from a specimen that Hultén detected at Captains Harbour in Unalaska Island. It should also be looked for in other places in Arctic Canada.

Three other species of *Sticta* have been recorded from Labrador, without indication of localities, viz.:

Sticta aurata Ach. "Labrador" (Macoun 1902, p. 83).

Sticta limbata (Sm.) Ach. "Labrador" (Macoun 1902, p. 84).

Sticta quercirans (Michx.) Ach. "Labrador" (Macoun 1902, p. 84).

To judge by their distribution in Europe, the above three species were probably found in southern Labrador.

PELTIGERACEAE

28. **Solorina crocea** (L.) Ach.

Port Harrison; Wolstenholme; Cape Dorset; Pangnirtung, Clyde; Craig Harbour.

Previously recorded from Labrador: Venison Tickle (Macoun 1902, p. 91) and "Chidley Peninsula"[1] (Anon. 1907, p. 88); King George Sound[2] (Macoun 1902, p. 91); also Philpots Island (Dickie 1871, p. 34).

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[1] Already reported by Macoun (*l.c.*) from "Cape Chudleigh". (N.P.)

[2] This station is in N. Quebec on the south shore of Hudson Strait and was visited by Dr. Robert Bell in 1897. Macoun's reference (*l.c.*) of it to Baffin Bay is entirely erroneous. (N.P.)

Solorina crocea appears to be common in the Canadian Eastern Arctic and in Labrador, as was to be expected.

No other *Solarina* was found in Dr. Polunin's present collection, but

29. Solorina saccata (L.) Ach.

This has been recorded from Labrador: L'Anse au Clair (Hulting 1896, p. 192); from Cumberland Sound; and from Somerset Island (*See* below); and furthermore from Akpatok Island (Smith 1934, p. 202). I have seen the latter plants and found that two of them were indeed *Solorina saccata*. The third plant was, however,

30. Solorina bispora Nyl.

Akpatok Island (Polunin ex Smith 1934, p. 202, sub nom. *Solorina saccata* pro parte). It should be noted that *Solorina saccata* has also been reported from Cumberland Sound (Dickie 1869, p. 466); and from Port Kennedy (Hooker 1861, p. 87). These plants, which I have not seen, should be compared with *Solorina bispora.*

31. Nephroma arcticum (L.) Torss.

Cartwright, Port Harrison; Pangnirtung.

Recorded from many places in Labrador: Okak (Meyer 1830, p. 4), "Labrador" (Schlechtendahl 1835-6, p. 78), "Chidley Peninsula", Anse Sablon, Nain, and Hopedale (Anon. 1907, p. 88); Port Burwell or near (Hantzsch 1909, p. 220); Clearwater Lake (Macoun 1902, p. 85); C. Baffin: Kekerten (Stein 1890, p. 99).

These localities suggest that the species is common in subarctic and low-arctic regions—a finding that is in good agreement with our European results. It was the only *Nephroma* in the present collection.

Nephroma expallidum Nyl. has been recorded from "Labrador" (Macoun 1902, p. 85).

Nephroma laevigatum Ach. has been recorded from Labrador: East St. Modeste (Macoun 1902, p. 86).

Nephroma parile Ach. has also been reported from Labrador: Forteau (Macoun 1902, p. 86, sub syn. *N. laevigatum* Ach. var. *parile* Nyl.)

32. Peltigera aphthosa (L.) Willd., *sensu ang.*

Mansel Island (*leg.* Douglas Leechman); Wakeham Bay; Lake Harbour; Pangnirtung; Dundas Harbour.

The old *Peltigera aphthosa* has been divided into two different species, *P. aphthosa* (L.) Willd. *sensu ang.* and *Peltigera leucophlebia* (Nyl.) Gyeln. The former species has no distinct veins on the underside, in addition to having a coherent cortex on the underside of the apothecia; the latter species has distinctly elevated veins on the underside, and no continuous cortex on the underside of the apothecia (usually there are only scattered patches of cortex). Several authors, e.g., Gyelnik and Degelius, attribute specific importance to these characters (cf. Nilsson, 1932, pp. 37-41). I am myself inclined to be of the same opinion; but the specimens that are collected in the Arctic are often so unsatisfactory as to render certain determination impossible.

Unfortunately, some of Dr. Polunin's plants were returned without a sufficient study of these characters—from Cartwright; Clyde; Pond Inlet (the latter plant collected by Frère Bazin); Craig Harbour.

There are a great number of reports of "*Peltigera aphthosa*" from within or near the Canadian Eastern Arctic, but they do not distinguish between the two species mentioned above.

Labrador: Okak (Meyer 1830, p. 4), Fort Chimo and Clearwater Lake (Macoun 1902, p. 87); N. Baffin; and inland to the west of Hudson Bay (Lynge 1935, p. 10); Chesterfield (Polunin 1936 field notes); Barrow River (Hooker 1825, p. 423); Melville Island (Brown 1824, p. cccvi); also "Grinnell Land" (Lehnert and Greely 1886, p. 397, and 1888, p. 18). Most probably a considerable part of these records stand for *Peltigera leucophlebia,* which appears, on the whole, to be the commoner species in the Arctic. Anyhow, *Peltigera aphthosa* sens. lat. is very common in these regions.

33. **Peltigera leucophlebia** (Nyl.) Gyeln.

South Bay in Southampton Island; Port Harrison; Chesterfield *apoth. parv.;* Lake Harbour; Pangnirtung; Dundas Harbour.

This species, which is evidently quite common (*See* above), has not formerly been recorded from the region.

34. **Peltigera canina** (L.) Willd.

Wolstenholme (f. *membranacea*).

I was not a little astonished to find this conspicuous species so poorly represented in the present collection, for it has been recorded from so many localities in the Canadian Eastern Arctic and in Labrador that it must be quite common thereabouts.

Labrador: Okak (Meyer 1830, p. 3), Forteau (Arnold 1896, p. 6); Digges Island; and "Mansfield" (Mansel) Island (Macoun 1902, p. 90); C. Baffin: Cumberland Sound (Tuckerman 1879, p. 167); Philpots Island (Dickie 1871, p. 34); Ellesmere: Hayes Sound, Winter quarters of H.M.S. *Alert,*[1] and Discovery Bay (Fries 1879, p. 367).

35. **Peltigera rufescens** (Sm.) Hoffm.

Wolstenholme; Port Harrison.

Previously recorded from Labrador: Forteau and Red Bay (Macoun 1902, p. 89).

36. **Peltigera erumpens** (Tayl.) Vain.

Clyde.

37. **Peltigera scabrosa** Th. Fr.

Wolstenholme; Pangnirtung, Clyde; Dundas Harbour.

Previously recorded from Labrador: Red Bay (Arnold 1896, p. 6); Akpatok Island (Smith 1934, p. 202); C. Baffin "Cumberland Sound"

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

(Dickie 1869, p. 466); and Grant Land: Floeberg Beach, Dean Mountain, and Dobbin Bay (Fries 1879, p. 367). Probably fairly common in the Canadian Eastern Arctic.

38. **Peltigera malacea** (Ach.) E. Fr.

Dundas Harbour—a miserable specimen, hardly to be determined with certainty. Previously recorded from Akpatok Island (Smith 1934, p. 202).

Several other species of *Peltigera* have been recorded from within or near our area, viz.:

Peltigera polydactyla (Neck.) Hoffm. Labrador: L'Anse au Mort (Macoun 1902, p. 88).

Peltigera pulverulenta (Tayl.) Nyl. Labrador: Clearwater Lake, Capstan Island, and L'Anse au Clair (Macoun 1902, p. 89).

39. **Peltigera scutata** (Dicks.) Duby

C. Baffin: Kekerten (Stein 1890, p. 99). I am astonished to find this species recorded from such a northerly station.

Peltigera spuria (Ach.) DC. Labrador: Clearwater Lake (Macoun 1902, p. 90, sub syn. *P. canina* var. *spuria*).[1]

40. **Peltigera venosa** (L.) Hoffm.

Labrador: Forteau (Hulting 1896, p. 191); Akpatok Island (Smith 1934, p. 202); C. Baffin: Kikkerton (Kekerten) Islands in Cumberland Sound (Dickie 1869, p. 466).

LECIDEACEAE

41. **Lecidea atrobrunnea** (Ram.) Schaer.

Wolstenholme; Arctic Bay; Dundas Harbour.

42. **Lecidea confluens** (Wigg.) Ach.

Clyde.

Thallus crassus, areolae convexae vel verrucosae, caeruleo-cinerascentes, subdiscretae et hypothallo atro impositae. Apothecia adpressa, discus ater, epruinosus, leviter nitidus, margine tenui circumdatus. Hypothecium fusconigrescens, excipulum nigrescens. Sporae ellipsoideae, 11-13μ longae. The spores of this specimen are rather large for the species. A parasitic Fungus has established itself at the tops of the convex areolae.

Previously recorded from the south shore of Fury and Hecla Strait (Hooker 1825, p. 421).

43. **Lecidea speirea** Ach.

Burwell; Lake Harbour.

Previously recorded from Labrador: Capstan Island (Arnold 1896, p. 13); also from Akpatok Island (Smith 1934, p. 202).

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[1] According to recent investigations this 'species' is nothing but a fertile *P. erumpens*. The name *P. spuria* (Ach.) DC. is the valid one. (E. Dahl, October 1946.)

44. **Lecidea** cf. **soredizodes** (Nyl.) Vain.

Arctic Bay.

The plant is so poorly developed that the determination is uncertain. But it seems to me that it agrees in habit; the chemical reaction is J— and KOH—.

45. **Lecidea tesselata** Flk.

Burwell; Wolstenholme; Pangnirtung; Arctic Bay; Dundas Harbour.

Previously recorded from Labrador: Red Bay (Arnold 1896, p. 13); Baker Lake (Lynge 1935, p. 10); also Grant Land: Floeberg Beach and Discovery Bay (Fries 1879, p. 361).

This considerable number of localities suggests that the species is common and widely distributed in the area, as was indeed to be expected.

46. **Lecidea lapicida** Ach.

Somerset Island: Port Kennedy (Hooker 1861, p. 87); also Akpatok Island (Polunin ex Smith 1934, p. 202).

f. **ecrustacea** (Bausch) Anzi

Burwell; Lake Harbour; Arctic Bay; Dundas Harbour.

Previously reported from Akpatok Island (Polunin ex Smith 1934, p. 202).

f. **declinans** Nyl.

Dundas Harbour.

Previously reported from Labrador: L'Anse au Clair, and Forteau (Arnold 1896, pp. 13-14).

f. **ochracea** (Nyl.) Vain.

Wolstenholme.

47. **Lecidea pantherina** (Ach.) Th. Fr.

var. **achariana** Vain.

Burwell; Arctic Bay.

The typical form has previously been recorded from Akpatok Island (Smith 1934, p. 202); also Baker Lake (Lynge 1935, p. 10).

48. **Lecidea macrocarpa** (DC.) Th. Fr.

var. **platycarpa** (Ach.) Th. Fr.

Clyde.

var. **superba** (Kbr.) Th. Fr.

Burwell.

49. **Lecidea melinodes** (Kbr.) Magn., *n. comb.*

Aspicilia (?) *melinodes* Kbr., Sitz. ber. der Akad. der Wiss., 1 Abt., LXXI, p. 3 (Wien 1875).

Pangnirtung.

This species belongs to the *macrocarpa* section. It has an ochraceous thallus with numerous small soredia, thus being quite distinct from *Lecidea flavocaerulescens*. It is very widely distributed in arctic regions; besides this Baffin example I have seen plants from Greenland, Jan Mayen, Iceland, and Spitsbergen.

This conspicuous and common species could not escape the attention of previous collectors and authors. Th. M. Fries named it *Lecidea contigua* (Hoffm.) Fr. f. *flavicunda* (Ach.) Fr. (Lich. Spitsb., p. 38 (1867)). I have myself named it *Lecidea lidii* Lynge, in herb. and in my paper on Lichens from West Greenland (1937, pp. 41 and 62). Dr. Magnusson has seen Koerber's plant, and I am glad that this species is now cleared up.

50. **Lecidea flavocaerulescens** (Hornem.) Ach.

Lake Harbour; Pangnirtung.

Previously recorded from Labrador, without locality and with some doubt, by Cummings (1902, p. 200).

51. **Lecidea dicksonii** (Gmel.) Ach.

Cape Dorset; Arctic Bay.

This species is one of the commonest lichens all over the Arctic. From our area it has previously been recorded only from Grant Land: Cape Union, and from farther south in Ellesmere: Cape Sabine, and Alexandra Haven (Fries 1879, p. 361).

52. **Lecidea obnubila** Th. Fr. & Hellb., in Th. Fries, Lich. Scand. II, p. 459 (1874); Lynge, Medd. om Grønland, CXVIII, 8, p. 76 (1937).

Pangnirtung, 2613a-29.

The present plant agrees with Scandinavian and West Greenland specimens in almost all its characters. An exception is that I found in it thin paraphyses which were hardly incrassated at their apices, whereas in the Greenland plants the paraphyses are more incrassated at their apices, being about 2·5μ thick.

53. **Lecidea lulensis** (Hellb.) Th. Fr.

Arctic Bay.

Previously recorded from two localities on Melville Peninsula (Lynge 1935, p. 11).

54. **Lecidea wulfenii** (Hepp) Arn.

Lecidea elaeochroma (Ach.) Ach. var. *muscorum* (Wulf.) Th. Fr.

Churchill; South Bay in Southampton Island; Lake Harbour; Dundas Harbour.

This common species has previously been recorded from Southampton Island and Boothia Peninsula (Lynge 1935, p. 12); Igloolik (Hooker 1825, p. 421, sub nom. *Lecidea sabuletorum*); King William Land; Gjøa Harbour (Lynge 1921, p. 6); also from Ellesmere: Alexandra Haven (Fries 1879, p. 361).

55. **Lecidea armeniaca** (DC.) Fr.

Burwell.

56. **Lecidea** cf. **arctogena** Th. Fr.

Wolstenholme.

The plant is only a fragment, so that quite certain determination is hardly possible. However, it is referred to this species on account of its characteristic ochroleucous colour, and the yellow KOH reaction.

57. **Lecidea elata** Schaer.

Arctic Bay; Dundas Harbour.

Thallus rimis in areolis depresse convexis divisus, areolae rimulis densis instructae, sed non farinosae. Hypothallus haud distinctus. Hypothecium omnino incoloratum, hymenium superne pulchre caerulescens, praeterea incoloratum. Paraphyses, etiam in KOH, apice non incrassatae. Sporae 7-10 x 5-6μ. Medulla J—, KOH—, hymenium J persistente caerulescens.

These observations were made on the Arctic Bay plant. Its habit suggests var. *marginata* (Schaer.) Mass. The plant from Dundas Harbour, however, agrees fairly well with Havås, Lich. Norv. No. 497 (*Lecidea elata* var. *purissima* Darb., referred to f. *planula* Magn. by Magnusson, Studien über Lecidea-Arten, p. 130 (1930)). It has a thick, yellowish thallus, resolved into cracked and isolated, small (2-3 mm. in diam.) areolae, resting on a greyish-blue hypothallus.

Lecidea elata has previously been recorded from Baker Lake, which lies just outside our area to the west of Hudson Bay (Lynge 1935, p. 13); from Grant Land: Winter quarters of H.M.S. *Alert*[1], and from farther south in Ellesmere: Cape Sabine (Fries 1879, p. 361). It cannot be rare in Arctic Canada.

58. **Lecidea ramulosa** Th. Fr.

Burwell; Craig Harbour.

59. **Lecidea ementiens** Nyl.

Pond Inlet.

60. **Lecidea** cf. **helvola** (Kbr.) Th. Fr.

f. **minor** Nyl.

Wolstenholme—on a dead plant, most probably decayed *Cassiope tetragona.*

The specimen is referred to this species, and not to *Lecidea vernalis,* on account of its very small apothecia (0·2-0·3 mm. in diam.). But I have done this only with hesitation, for the colour of the apothecia is not "helvolus", but "rufescens", as in *Lecidea vernalis.* It might almost as well be a young *Lecidea vernalis.*

The above 20 species of *Lecidea* are, of course, far from representative of the lichen flora of this huge area. As will be noted below, a considerable number of other species have been recorded from the Canadian Arctic and Labrador, including not a few from our area, and yet certainly very much is still left to be done in the group.

61. **Lecidea aenea** Duf.

This has been recorded from Grant Land: Cape Union (Fries 1879, p. 360).

var. **canadensis** Lynge

This has been recorded from N. Baffin: Eclipse Sound (Lynge 1935, p. 11).

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

62. **Lecidea albosuffusa** Th. Fr.

Reported only from Akpatok Island (Polunin ex Smith 1934, p. 202, sub nom. *Lecidea petrosa*).

"Lecidea alpestris Sommerf." has been reported from Akpatok Island (Smith 1934, p. 202). I have seen the plant, which is distinctly a *Biatora*—either *Lecidea vernalis* (*q.v.*) or a nearly related species (hymenium superne fuscescens, sporae 12-16 x 5-6μ).

Lecidea arcuatula (Arn.) Nyl. Labrador: L'Anse au Loup (Arnold 1896, p. 12), cf. Magnusson's paper on the *Lecidea rivulosa* section (1925, p. 30) and his North American Lecideae (1936, p. 9).

Lecidea asserculorum Ach. Labrador: L'Anse au Clair (Macoun 1902, p. 180, sub nom. *Biatora asserculorum*).

Lecidea assimilata Nyl. King William Land: Gjøa Harbour (Lynge 1921, p. 6).

63. **Lecidea auriculata** Th. Fr.

var. **diducens** (Nyl.) Th. Fr.

This has been recorded from Baker Lake, which lies outside our area to the west of Hudson Bay (Lynge 1935, p. 11); also from Grant Land: Discovery Bay (Fries 1879, p. 362).

64. **Lecidea berengeriana** (Mass.) Th. Fr.

This has been reported from Labrador: East St. Modeste (Arnold 1896, p. 13); also from Akpatok Island (Smith 1934, p. 202).

65. **Lecidea brachyspora** Th. Fr.

Reported from Grant Land: Floeberg Beach (Fries 1879, p. 362).

66. **Lecidea coarctata** (Sm.) Nyl.

This has been recorded from Labrador: L'Anse au Clair (Arnold 1896, p. 13, f. *elacista*); also from C. Baffin: Cape Adair (Dickie 1869, p. 467).

"Lecidea contigua Fr." has been reported from Davis Strait "common" (Dickie 1869, p. 467).[1]

67. **Lecidea crassipes** (Th. Fr.) Nyl.

Reported only from Grant Land: Winter quarters of H.M.S. *Alert*[2] (Fries 1879, p. 361).

Lecidea crustulata Ach. Labrador: "an mehreren Standorten" (Arnold 1896, p. 14).

68. **Lecidea decipiens** (Ehrh.) Ach.

Reported only from Grant Land: Winter quarters of H.M.S. *Alert*[2] (Fries 1879, p. 360).

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[1] The *Lecidea contigua* of Dickie's time is now recognized to have been a collective species; Dickie's report of it may, moreover, have originated only from Greenland, and so has been omitted from the summary. (N.P.)

[2] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

69. **Lecidea despecta** Th. Fr.

Reported only from Grant Land: Floeberg Beach (Fries 1879, p. 362).

Lecidea eckfeldtii Zahlbr. Labrador: Forteau, and L'Anse au Clair (Arnold 1896, p. 14). Synonymous with *Lecidea distans* Eckf., *vide* Magnusson (1936, p. 50).

70. **Lecidea emergens** Flot.

Reported only from Akpatok Island (Polunin ex Smith 1934, p. 202).

Lecidea euphorea (Flk.) Nyl. Labrador: Forteau, "an alten Brettern" (Arnold 1896, p. 14, sub nom. *"Lecidea parasema"*).

71. **Lecidea globifera** Ach.

Reported only from Port Kennedy (Hooker 1861, p. 88).

72. **Lecidea goniophila** Flk.

var. **granulosa** (Flot.) Vain.

Reported from Labrador: East St. Modeste, Red Bay, L'Anse au Mort, and Forteau (Arnold 1896, p. 14, sub nom. *Lecidea latypea*); Akpatok Island (Smith 1934, p. 202); Baker Lake to the west of Hudson Bay (Lynge 1935, p. 12); also Grant Land: Egerton Valley, Westward-Ho Valley, Discovery Bay, and Mount Stephenson (Fries 1879, p. 361, sub nom. *Lecidea elaeochroma* γ *pilularis* (Dav.?) Th. Fr.).

f. **spathea** Vain.

Akpatok Island (Polunin ex Smith 1934, p. 202, sub nom. *Lecidea griseoatra—See* below).

73. **Lecidea granulosa** (Ehrh.) Schaer.

Reported from Labrador: L'Anse au Loup, and Blanc Sablon (Arnold 1896, p. 13); also "Davis Strait: west side (Dickie 1869, p. 467)"[1]

"*Lecidea griseoatra* Schaer." has been reported from Akpatok Island (Smith 1934, p. 202). I have seen the plant (thallus areolatus, areolis convexis, contiguis, paraphyses facillime discretae, apice non incrassatae, sporae late ellipsoideae). It is *Lecidea goniophila* Flk. f. *spathea* Vain. (*q.v.*).

74. **Lecidea impavida** Th. Fr.

Recorded only from Melville Peninsula: Danish Island (Lynge 1935, p. 12).

Lecidea labradorica Arn. Labrador: Red Bay (Arnold 1896, p. 13).

75. **Lecidea leucophaea** (Flk.) Th. Fr.

f. **griseoatra** (Flot.) Th. Fr.

Reported from Grant Land: Cape Union and Floeberg Beach (Fries 1879, p. 360).

Lecidea lindstroemii Lynge. King William Land: Gjøa Harbour (Lynge 1921, p. 6).

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[1] I have put this statement in quotes and queried it in the summary because it may result from a mistake; there is no mention of the species in the place cited by Prof. Lynge. (N.P.)

76. **Lecidea lithophila** (Ach.) Th. Fr.

This has been reported from Akpatok Island (Smith 1934, p. 202). It would be of interest to study the plant, which I have not seen.

Lecidea panaeola Ach. Labrador: Capstan Island and L'Anse au Loup (Arnold 1896, p. 14).

77. **Lecidea paupercula** Th. Fr.

var. **acrogena** Th. Fr.

Reported only from Grant Land: Cape Union (Fries 1879, p. 360).

"*Lecidea platycarpa*" has been recorded from Labrador: L'Anse au Loup and Forteau (Arnold 1896, p. 14), Pottles Cove (Cummings 1902, p. 200). *See* also *L. macrocarpa* var. *platycarpa* (above) and cf. Lynge (1937, p. 62).

Lecidea polaris Lynge. Boothia Peninsula: Magnetic North Pole[1] (Lynge 1935, p. 11).

78. **Lecidea pungens** (Kbr.) Nyl.

Recorded from N. Baffin: Eclipse Sound; also from Baker Lake (Lynge 1935, p. 12).

79. **Lecidea rubiformis** Wahlenb.

Recorded only from Grant Land: Winter quarters of H.M.S. *Discovery*[2] (Fries 1879, p. 360).

80. **Lecidea scrobiculata** Th. Fr.

Recorded from Grant Land: Floeberg Beach and Lincoln Bay (Fries 1879, p. 362).

Lecidea scrupulosa (Eckfeldt) Magn. Labrador: L'Anse au Clair and Blanc Sablon (Arnold 1896, p. 12), cf. Magnusson (1925, p. 47, and 1936, p. 9).

Lecidea tenebrosa Flot. Labrador: Capstan Island (Arnold 1896, p. 13).

81. **Lecidea tornoensis** Nyl.

Reported only from Ellesmere: Alexandra Haven (Fries 1879, p. 360).

Lecidea uliginosa (Schrad.) Ach. Labrador: White Bear River (Arnold 1896, p. 13).

82. **Lecidea ultima** Th. Fr.

Reported only from Grant Land: Floeberg Beach (Fries 1879, p. 363).

83. **Lecidea vernalis** (L.) Ach.

Reported from Labrador: L'Anse au Mort (Macoun 1902, p. 144, sub syn. *Biatora vernalis* (L.) Fr.); also ? Akpatok Island (Polunin ex Smith 1934, p. 202, sub nom. *Lecidea alpestris*. *See* above).[3]

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[1] I.e., as then supposed. British flights in the early spring of 1945 and American ones this autumn have, however, indicated the present position of the Magnetic North Pole to be far to the north of Boothia Peninsula. It is hoped that the detailed Canadian Geodetic Service observations made in 1946 and especially the work which we plan for 1947, will lead to more satisfactory localization. (N.P., November 1946.)

[2] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

[3] Recently confirmed from S. N. Quebec—*See* Foreword, p. iii. (N.P., November 1946.)

Lecidea viridans (Flot.) Lamy. Labrador: East St. Modeste (Arnold 1896, p. 14).

84. **Lecidea vorticosa** (Flk.) Kbr.

Reported from Grant Land: Westward-Ho Valley and Floeberg Beach, and from farther south in Ellesmere: Cape Sabine and Alexandra Haven (Fries 1879, p. 361).

85. **Mycoblastus sanguinarius** (L.) Norm.

No *Mycoblastus* was found in the present collection, but *M. sanguinarius* (L.) Norm. has been recorded from Labrador: L'Anse au Loup and L'Anse au Clair (Arnold 1896, p. 12, sub nom. *Megalospora alpina*), Clearwater Lake (Macoun 1902, p. 153, sub nom. *Heterothecium sanguinarium*); also from C. Baffin: Cape Adair, "rare" (Dickie 1869, p. 467, sub nom. *"Lecidea sanguinaria* var. β").

86. **Bacidia alpina** (Schaer.) Vain.

Burwell.

This was the only *Bacidia* found in the present collection, but several species of this large genus have been recorded from Arctic Canada and Labrador, including two from our area:

Bacidia fusca (Mass.) DR. (*B. obscurata* Sommerf.). Labrador: L'Anse au Mort (Arnold 1896, p. 14).

Bacidia melaena (Nyl.) Arn. Labrador: L'Anse au Clair (Hulting 1896, p. 190, sub nom. *Lecidea melaena* Nyl.).

Bacidia microcarpa (Th. Fr.) Lettau. Labrador: L'Anse au Mort (Hulting 1896, p. 190, sub nom. *Lecidea triplicans* Nyl.).

Bacidia muscorum (Sw.) Mudd. Labrador: East St. Modeste (Arnold 1896, p. 15, f. *alpina*).

87. **Bacidia sabuletorum** (Flk.) Lettau

Reported only from Grant Land: Winter quarters of H.M.S. *Discovery*[1] (Fries 1879, p. 359, sub nom. *Bilimbia hypnophila* (Ach.) Th. Fr.).

Bacidia trisepta (Naeg.) Zahlbr. Labrador: L'Anse au Loup (Arnold 1896, p. 15).

88. **Bacidia verecundula** (Th. Fr.) Magn.

Reported only from Grant Land: "vicinity of Discovery Bay" (Fries 1879, p. 359, sub syn. *Bilimbia verecunda* (*sic*)).

89. **Toninia lobulata** (Sommerf.) Lynge

Toninia syncomista (Flk.) Th. Fr.

Craig Harbour (spores 1- and 1-3-septate).

Previously recorded from Labrador: Forteau and L'Anse au Loup (Arnold 1896, p. 12); also King William Land: Gjøa Harbour (Lynge 1921, p. 7).

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[1] I.e., Discovery Harbour, lat. 81° 43′ N (N.P.)

Two other species of this genus have been recorded from the Canadian Eastern Arctic, viz.:

90. **Toninia caeruleonigricans** (Lightf.) Th. Fr.

Reported from Assistance Bay in Cornwallis Island (Babington 1852, p. 277, sub nom. *Lecidea vesicularis* var. *globosa* Fries), and from Port Kennedy in Somerset Island (Hooker 1861, p. 87).

91. **Toninia squalida** (Schleich.) Mass.

Reported only from C. Baffin: Cumberland Sound (Dickie 1869, p. 467, sub syn. *Lecidea squalida*).

92. **Lopadium muscicolum** (Sommerf.) Kbr.

Clyde; Pond Inlet.

Previously recorded from C. Baffin: Cumberland Sound (Tuckerman 1879, p. 167, sub nom. *Heterothecium pezizoideum*).

93. **Lopadium fuscoluteum** (Hoffm.) Mudd

This has been recorded from Igloolik (Hooker 1825, p. 421, sub nom. *Lecidea fusco-lutea*).

94. **Rhizocarpon chionophilum** Th. Fr.

Wakeham Bay; Clyde; Arctic Bay.

Previously recorded from Melville Peninsula and Baker Lake (Lynge 1935, p. 13); Grant Land: Winter quarters of *Alert*[1], and Cape Union (Fries 1879, p. 365, as *"chionophyllum"*). It is not rare in the Canadian Eastern Arctic. Possibly *"Lecidea alpicola* Wahlenb." from Port Kennedy (Hooker 1861, p. 87) stands for this species.

95. **Rhizocarpon copelandii** (Kbr.) Th. Fr.

Craig Harbour.

Previously recorded from Labrador ("nicht selten"): Capstan Island, Forteau, and L'Anse au Clair (Arnold 1896, p. 16); also N. Baffin and Melville Peninsula (Lynge 1935, p. 14).

96. **Rhizocarpon badioatrum** (Flk.) Th. Fr.

Burwell; Lake Harbour; Pangnirtung.

Previously only recorded from Labrador: Okak (Meyer 1830, p. 1, sub nom. *"Lecidea atroalba* Ach."—perhaps *Rhizocarpon disporum* ?), and from Forteau and L'Anse au Loup (Arnold 1896, p. 15, sub nom. *Catocarpus atroalbus* Wulf.).

97. **Rhizocarpon jemtlandicum** Malme

Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde.

Previously recorded from N. Baffin: Eclipse Sound (Lynge 1935, p. 14). Most probably common in the Canadian Eastern Arctic.

98. **Rhizocarpon rittokense** (Hellb.) Th. Fr.

Pangnirtung, scarce.

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

99. **Rhizocarpon geographicum** (L.) DC.

Chesterfield; Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Arctic Bay; Dundas Harbour; Craig Harbour.

The following records are supposed to stand for this ubiquitous species, but some of them may possibly represent the yellow Catocarpons:

Labrador: Okak (Meyer 1830, p. 1, sub nom. *Lecidea atrovirens* β, *alpicola*), Pottles Cove (Cummings 1902, p. 200); Akpatok Island (Smith 1934, p. 202); Vansittart Island off Melville Peninsula; also Baker Lake, Sentry Island, and Churchill (Lynge 1935, p. 15); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub nom. *Lecidea geographica*), Assistance Bay (Babington 1852, p. 277), Port Kennedy (Hooker 1861, p. 87); "Smith Sound" (James 1863, p. 96, with a "?"); Ellesmere: Cape Sabine, Alexandra Haven, Egerton Valley, and Westward-Ho Valley (Fries 1879, p. 365).

100. **Rhizocarpon disporum** (Naeg.) Müll. Arg.

Burwell; Lake Harbour; Arctic Bay; Dundas Harbour.

Previously recorded from Labrador: L'Anse au Clair (Arnold 1896, p. 16, sub nom. *Rhizocarpon montagnei* Flot.); Akpatok Island (Smith 1934, p. 202, sub nom. *Rhizocarpon gemmatum* Koerb. *sic*); N. Baffin; and Baker Lake (Lynge 1935, p. 15); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub nom. *Lecidea petraea*); Grant Land: Westward-Ho Valley, Egerton Valley, Floeberg Beach, and Cape Union (Fries 1879, p. 365, sub syn. *Rhizocarpon geminatum*). Evidently common in the Canadian Eastern Arctic.

101. **Rhizocarpon eupetraeum** (Nyl.) Arn.

Chesterfield; Lake Harbour.

We have several previous records of this from Labrador: L'Anse au Clair (Arnold 1896, p. 16, and Hulting 1896, p. 192), and two other reports without localities, viz., Schlechtendahl (1835-6, p. 77, sub nom. *Lecidea atro-alba*, which may refer to this species) and Macoun (1902, p. 166). It is not a common species in other arctic regions.

The following Rhizocarpons have also been reported from Arctic Canada or Labrador:

Rhizocarpon concentricum (Dav.) Beltr. Labrador: L'Anse au Mort (as "*Rhizocarpon excentricum*"), and L'Anse au Loup (Arnold 1896, p. 16).

"*Rhizocarpon confervoides* DC." has been reported from Akpatok Island (Smith 1934, p. 202). I have seen the specimen and found it to be a *Staurothele* cf. p. 308: sporae murales, geminatae, obscuratae, 37-40 x 18-20μ, gonidia hymenialia 8-10 x 5μ. The same plant is also found in Greenland. I have named it *Staurothele fuscocuprea* (Nyl.) Zschacke in my "Lichens from West Greenland" (1937, p. 18). It is abundant in my (unpublished) collections from East Greenland. The above determination is based on Malme's description in "De Svenska Arterna av Lavsläktet Staurothele", p. 199 (1919). But this description does not quite conform to our plants, which may perhaps represent an undescribed species. The question will be discussed in my forthcoming paper on my East Greenland lichens.[2]

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[1] Collected on Philpots Island, lat. 74° 44′ N., long. *c.* 80° W. (N.P.)

[2] Published (1940) in Lynge: "Lichens from North East Greenland...II. Microlichens", p. 16, but there is no such discussion. (E. Dahl, October 1946.)

Rhizocarpon distinctum Th. Fr. Baker Lake and Sentry Island (Lynge 1935, p. 14).

102. **Rhizocarpon grande** (Flk.) Arn.

This has been recorded from Labrador ("nicht selten"): L'Anse au Clair (Arnold 1896, p. 16); Melville Peninsula; also Baker Lake, and Yathkyed Lake (Lynge 1935, p. 15); Ellesmere: Cape Sabine (Fries 1879, p. 365, sub nom. *Rhizocarpon endamyleum*). The f. *quaternarium* Th. Fr. has been recorded from Ellesmere: Alexandra Haven (Fries 1879, p. 365). This number of finds is so considerable as to suggest that the species may be more common in and around our area than in most other arctic regions.

103. **Rhizocarpon petraeum** (Wulf. ?) Mass.

This has been recorded from Akpatok Island (Smith 1934, p. 202). I have seen the plant: apothecia subinnata, margine tenui, nudo; sporae incoloratae, murales, 27-33µ. Malme has limited the species in the same sense (1914, pp. 279-80, 294).

It is hardly possible to identify "*Lecidea petraea* Ach." from Port Kennedy (Hooker 1861, p. 87) without seeing the plant.[1]

Rhizocarpon polycarpum (Hepp) Th. Fr. Labrador: Forteau (Hulting 1896, p. 192), Blanc Sablon (Arnold 1896, p. 16).

CLADONIACEAE

104. **Baeomyces roseus** Pers.

No *Baeomyces* was found in the present collection, but *B. roseus* Pers. has been recorded from C. Baffin: Cape Adair and Home Bay (Dickie 1869, p. 465).

105. **Cladonia alpestris** (L.) Rabenh.

Churchill; Cartwright; Port Harrison; Lake Harbour.

Previously recorded from many places in Labrador: Blanc Sablon (Arnold 1896, p. 4), "everywhere, especially noted at Aillik-Mokkovik and Hebron-Iterungnek" (Cummings 1902, p. 200), Nain and Clearwater Lake (Macoun 1902, p. 135, sub syn. *Cladonia sylvatica* var. *alpestris*); Chidley Peninsula; also Nain and Hopedale (Anon. 1907, p. 87); C. Baffin: ? (Dickie 1869, p. 465, sub syn. *Cladonia rangiferina* γ *alpestris*), Kivitung (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167), Kingua Fiord (Stein 1890, p. 96); S. Baffin: Upper Savage Islands (Lamb *in litt.* 1938).

Cladonia alpestris is common in the southern part of the region.

106. **Cladonia rangiferina** (L.) Web.

Cartwright, Hebron; Port Harrison; Wolstenholme, Wakeham Bay; Lake Harbour; Pangnirtung, Clyde; Pond Inlet (this last collected by Frère Bazin).

The plants are often of a pale colour, with an unusually smooth cortex, resembling shaded specimens from southern latitudes.

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[1] The same should probably be said of the report of this from Philpots Island by Dickie (1871, p. 34). (N.P.)

There are many records of *Cladonia rangiferina* from arctic and subarctic America. Labrador: Okak et sinum Baffini (Meyer 1830, p. 7), Okak (Arnold 1896, p. 4), Nain and Clearwater Lake (Macoun 1902, p. 134), "everywhere, especially noted at Aillik-Mokkovik, Hebron-Iterungnek, and Nachvak" (Cummings 1902, p. 200); Chidley Peninsula; also Anse Sablon (incl. var. *major*), Nain and Hopedale (Anon. 1907, p. 87); S. Baffin: (Macoun 1902, p. 134); C. Baffin: Kekerten and Kivitung (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167), Davis Strait "very common" (Dickie 1869, p. 465); "Lancaster Sound"[1] (Dickie 1871, p. 34); Ellesmere: Grinnell Land and Cape Baird, 1,800 feet above sea-level (Lehnert and Greely 1886, p. 397, and 1888, p. 18).

Possibly some of these records may stand for other Cladinae, but there can be no doubt that *Cladonia rangiferina* is very common in our area.

107. **Cladonia sylvatica** (L.) Hoffm.

Churchill; Pangnirtung.

These plants were stained with paraphenylendiamin, and the taste was faintly bitter. We cannot conclude much from two isolated finds, but they suggest the same relationship as in other arctic regions, viz., that *Cladonia mitis* (*q.v.*) is here a much more common species than *Cladonia sylvatica* sensu ang.

There are numerous records for *Cladonia sylvatica* sensu lat. from the region. It is likely that most of them stand for *Cladonia mitis,* and perhaps also for other Cladinae.

Labrador: *no loc.* (Schlechtendahl 1835-6, p. 78), Okak (Meyer 1830, p. 8, and Arnold 1896, p. 4), Nachvak (Cummings 1902, p. 200), Nain (Macoun 1902, p. 134); Burwell or near (Hantzsch 1909, p. 220, *fide* Zahlbruckner); C. Baffin: Kivitung (Stein 1890, p. 99); S. Baffin: (Macoun 1902, p. 134).

108. **Cladonia mitis** Sandst.

Burwell; Hebron; Chesterfield; South Bay in Southampton Island; Port Harrison; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet.

Previously recorded from Akpatok Island (Polunin ex Smith 1934, p. 202); also N. Baffin and Baker Lake (Lynge 1935, p. 16). Certainly very common and widely distributed in the region.

109. **Cladonia coccifera** (L.) Willd.

var. **stemmatina** Ach.

Hebron; Port Harrison; Wolstenholme; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (the latter locality coll. Frère Bazin); Dundas Harbour.

var. **pleurota** (Flk.) Vain.

Churchill; Wolstenholme; Lake Harbour.

The number of finds is sufficient to prove this species to be as common in eastern arctic and subarctic Canada as it is in all other regions of corresponding latitude in the Northern Hemisphere. It has previously been recorded from a great number of localities, although often without indication of the variety or *forma*, viz.: var. *stemmatina* from Churchill (Lynge 1935, p. 16); var. *pleurota* from Labrador (Meyer 1830, p. 6), Okak (Schlechtendahl 1835-6, p. 78, and Arnold 1869, p. 4); var. *incrassata* from Cumberland Sound (Tuckerman 1879, p. 167); var. *communis* from C. Baffin: Kivitung and Kekerten (Stein 1890, p. 99). *"Cladonia coccifera"* (or *"C. cornucopioides"*) has been recorded from Labrador: Blanc Sablon (Arnold 1896, p. 4), Aillik-Mokkovik (Cummings 1902, p. 200), Clearwater Lake, Fox Cove, and East St. Modeste (Macoun 1902, p. 137), and Anse Sablon (Anon. 1907, p. 87); also C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167).

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

110. **Cladonia deformis** (L.) Hoffm.

Cartwright; Lake Harbour; Pangnirtung, Clyde; Pond Inlet (the latter coll. Frère Bazin); Dundas Harbour.

Cladonia deformis is a common and widespread species that has been recorded from many localities within or near our area, viz., Labrador: *no loc.* (Cummings 1902, p. 200), Eagle River, Sandwich Bay, and Clearwater Lake (Macoun 1902, p. 138); ? Davis Strait, "not unfrequent" (Dickie 1869, p. 465), Kivitung and Kekerten (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167); "Lancaster Sound"[1] (Dickie 1871, p. 34), Port Kennedy (Hooker 1861, p. 87); Southampton Island (Sutton ex Raup 1936, p. 5).

111. **Cladonia bellidiflora** (Ach.) Schaer.

Burwell; Port Harrison; Cape Dorset, Lake Harbour; Clyde.

This conspicuous and common species has been recorded by many authors, as follows:

Labrador: *no loc.* (Schlechtendahl 1835-6, p. 78), Okak (Meyer 1830, p. 7), L'Anse au Mort (Hulting 1896, p. 188), West St. Modeste (Arnold 1896, p. 4), Aillik-Mokkovik and L'Anse au Clair (Cummings 1902, p. 200), Seal Lake, L'Anse au Mort, and "Coast of Labrador" (Macoun 1902, p. 137); Chidley Peninsula; and Anse Sablon (Anon. 1907, p. 86); Burwell or near (Hantzsch 1909, p. 220); C. Baffin: Cape Adair and Home Bay (Dickie 1869, p. 465), "Cumberland Sound" (Tuckerman 1879, p. 167), Kivitung and Kekerten (Stein 1890, p. 99).

112. **Cladonia amaurocraea** (Flk.) Schaer.

Burwell; Hebron; Port Harrison; Wakeham Bay; Pangnirtung; Pond Inlet.

Previously recorded from Labrador: Battle River, L'Anse au Loup, and L'Anse au Mort (Macoun 1902, p. 136); Chidley Peninsula (Anon. 1907, p. 86); [Akpatok Island (Smith 1934, p. 202—the plant is, however, *Cladonia elongata*—q.v.)]; C. Baffin: Kekerten (Stein 1890, p. 99).

113. **Cladonia uncialis** (L.) Web.

Burwell; Hebron, Cartwright; South Bay in Southampton Island; Port Harrison; Wolstenholme; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (the last coll. Frère Bazin), Arctic Bay; Dundas Harbour; Craig Harbour.

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

The frequency of this species is indicated by the number of localities represented in Dr. Polunin's collection. One would have expected more literary records.

Labrador: East St. Modeste, L'Anse au Loup, and Blanc Sablon (in the last two var. *adunca*) (Macoun 1902, p. 136), Hopedale (Anon. 1907, p. 87); Akpatok Island (Smith 1934, p. 202); N. Baffin; and Melville Peninsula; and W. coast of Hudson Bay (Lynge 1935, p. 16); "Cumberland Sound" (Tuckerman 1879, p. 167), Davis Strait "very abundant, as well as var. α *lacunosa*" (Dickie 1869, p. 465); Melville Peninsula: Igloolik (Lamb 1938 *in litt.*).

114. **Cladonia squamosa** (Scop.) Hoffm.

Cape Dorset, very scarce.

A poorly developed specimen, hardlly to be determined more accurately. The podetia are furcated, and the plant was at first referred to *Cladonia furcata* var. *pinnata*. But it is not stained by paraphenylendiamin, a fact that settles the question. There is a distinct cortex, dense phyllocladia, and hardly any scyphi.

Cladonia squamosa has been recorded just outside our area, from Labrador: Nain, Clearwater Lake, Forteau Bay, and L'Anse au Mort (Macoun 1902, p. 132); also Kazan River near the west coast of Hudson Bay (Lynge 1935, p. 16).

115. **Cladonia alpicola** (Flot.) Vain.

Lake Harbour; Pangnirtung—very scarce.

There is no previous record of this species from eastern arctic or subarctic America. Should it really be so rare?

116. **Cladonia elongata** (Jacq.) Hoffm.

Churchill; Burwell; Cartwright; South Bay in Southampton Island; Lake Harbour; Pangnirtung, Clyde; Arctic Bay; Dundas Harbour; Craig Harbour.

There are also many previous records of this species from eastern subarctic Canada and Labrador—at least if we can also include the plants called "*ecmocyna*" and "*macroceras*". Labrador: Okak (Meyer 1830, p. 6, Schlechtendahl 1835-6, p. 78, and Arnold 1896, p. 4), Nain, Clearwater Lake, Blanc Sablon, and L'Anse au Mort (Macoun 1902, p. 130), Anse Sablon (Anon. 1907, p. 87). "*Cladonia gracilis*" from Akpatok Island (Smith 1934, p. 202) stands for this species; the same is also true of the "*Cladonia amaurocraea*" reported by Smith (1934, p. 202).

Arnold (1896, p. 5) also reported "*Cladonia ecmocyna* (Ach.) Nyl., podetia simplicia, cornuta, rarius apice scyphosa, pallide glaucescentia, K—, steril bei Caroll Cove".

117. **Cladonia cornuta** (L.) Schaer.

Clyde, poorly developed plants, very scarce.

Previously recorded from Labrador: "Chidley Peninsula" (Anon. 1907, p. 87).

118. **Cladonia lepidota** Nyl.

Burwell (f. *stricta*); South Bay in Southampton Island (f. *stricta*); Wolstenholme (small but distinct scyphi); Cape Dorset (f. *stricta*); Pangnirtung (f. *stricta*), Clyde (f. *stricta* and f. *gracilescens*); Dundas Harbour (f. *stricta* and f. *gracilescens*).

This species, although it must be common in the region, has previously been recorded only once from anywhere near it, viz., York Factory (Leighton 1867, p. 189, sub nom. "Forma *lepidota* Ach."[1]).

119. **Cladonia macrophyllodes** Nyl.

Lake Harbour.

This has been found in southeast Greenland, cf. Dahl, Lynge and Scholander (1937, p. 35), but still is supposedly an addition to the flora of America proper; it is not mentioned in Fink's Lichen Flora of the United States (1935).

120. **Cladonia pyxidata (L.) Fr.**

var. **neglecta** (Flk.) **Mass.**

Port Harrison; Wolstenholme; Lake Harbour; Arctic Bay.

var. **chlorophaea Flk.**

Wakeham Bay; Cape Dorset, Lake Harbour; Pond Inlet.

var. **pocillum** (Ach.) Flot.

Burwell; Cape Dorset, Lake Harbour; Clyde; Dundas Harbour; Craig Harbour.

I have found it difficult to distinguish between this latter and var. *pachyphyllina,* so all specimens having thickly leaved, appressed phyllocladia are here named var. *pocillum.* All the plants tested with paraphenylendiamin gave a "cinnabarine" colour, which will exclude *Cladonia grayii.*

This common and widespread species has been recorded from the region by many authors, but they do not always determine and cite the variety. Labrador: *no loc. Cenomyce pyxidata* and *Cenomyce pocillum* (Schlechtendahl 1835-6, p. 78), Okak (*"Cenomyce pyxidata"* and *"Cenomyce pocillum"* Meyer 1830, p. 5, "f. *neglecta*" and "f. *pocillum*" Arnold 1896, p. 5), Clearwater Lake (Macoun 1902, p. 127), L'Anse au Mort and East St. Modeste (var. *chlorophaea* Macoun 1902, p. 137); Akpatok Island (Smith 1934, p. 202, incl. var. *pocillum*), Nottingham Island (Macoun 1902, p. 127), Southampton Island (Sutton ex Raup 1936, p. 5); Melville Peninsula; and W. side of Hudson Bay; and King William Land (Lynge 1935, p. 17); Igloolik, south shore of Fury and Hecla strait, and island off Cape Wilson (Hooker 1825, p. 424, sub nom. *Cenomyce pyxidata*); C. Baffin: Kekerten and Kivitung (var. *pocillum* Stein 1890, p. 99); Melville Island (Brown 1824, p. cccvii); "Lancaster Sound"[2] (Dickie 1871, p. 34), Port Kennedy (Hooker 1861, p. 87); Ellesmere: "Smith Sound" (James 1863, p. 96), winter quarters of *Alert*[3] and *Discovery,*[4] Norman Lockyer Island, Alexandra Haven, and Cape Sabine (var. *pocillum* Fries 1879, p. 352).

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[1] I.e., of *Cladonia degenerans.* (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[3] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[4] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

121. **Cladonia cyanipes** (Sommerf.) Vain.

Lake Harbour; Pangnirtung.

I have found no previous report of this species from the Canadian Eastern Arctic.

Several other Cladoniae have been reported from eastern arctic and subarctic Canada and Labrador, viz.:

Cladonia alcicornis (Lightf.) Flk. "in Mr. Edwards's collection" (Hooker 1825, p. 424, sub syn. *Cenomyce alcicornis*). This record is improbable; it possibly stands for a form of *Cladonia coccifera*, which in the Arctic often develops rather large phyllocladia. There are many reports of *Cladonia alcicornis* in arctic literature, but those that I have been able to investigate have all proved to be inaccurate.

Cladonia boryi Tuck. "Coast of Labrador" (Macoun 1902, p. 137).

Cladonia cariosa (Ach.) Spreng. Labrador: Battle Harbour (Macoun 1902, p. 126). I think it highly probable that this species has been overlooked elsewhere. In the Arctic it often develops its large white phyllocladia without podetia, and is then easily confused with *Cladonia pyxidata* and other species. Its yellow reaction with KOH and paraphenylendiamin is a good criterion.

Cladonia caroliniana Tuck. Labrador: Blanc Sablon (Macoun 1902, p. 136, sub nom. *Cladonia uncialis* var. *caroliniana*).

122. **Cladonia scabriuscula** (Del.) Sandst.

"Cladonia cenotea (Ach.) Schaer. var. *exaltata* Nyl." was reported from N. Baffin: Mitimatalik in Eclipse Sound (Lynge 1935, p. 16), but the test with paraphenylendiamin showed that it was in reality *C. scabriuscula* —cf. Lynge (1937, p. 103).

Cladonia corallifera Nyl. f. *elongata* Vain. "In Labrador von Bearn gesammelt" (Arnold 1896, p. 4).

123. **Cladonia crispata** (Ach.) Flot.

Curiously enough the only records of this species that concern us are the following:

Labrador: Eagle River, Sandwich Bay, and Indian Harbour (Macoun 1902, p. 132); C. Baffin: Kivitung (Stein 1890, p. 99). In the Arctic *C. crispata* is often reduced in development and is then easily confused with other species. It should be looked for in other parts of northern Canada.

124. **Cladonia decorticata** (Flk.) Spreng.

This has been reported only from N. Labrador: "Cape Chudleigh" (Chidley) (Macoun 1902, p. 127). The determination should, perhaps, be checked, and the plant compared with *Cladonia alpicola*.

Cladonia degenerans (Flk.) Spreng. Labrador: Battle Harbour. It is curious that there is no other record from eastern subarctic Canada. The species should be looked for elsewhere[1].

125. **Cladonia digitata** (L.) Schaer.

This has been reported from Labrador: Eagle River (Macoun 1902, p. 138); also C. Baffin: Kekerten (Stein 1890, p. 99). The records are quite probable, especially the former. But it should be remembered that in northern latitudes *C. digitata* is easily confused with poorly developed forms of *Cladonia deformis,* which is much more common in these regions. The latter species is P—, whereas *Cladonia digitata* is P+.

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[1] Recently found in C. Baffin and N. Quebec—*See* Foreword, p. iii. (N.P., November 1946.)

126. **Cladonia fimbriata** (L.) Fr.

This has been reported from Labrador: Clearwater Lake and L'Anse au Clair—at the latter place also var. *tubaeformis* (Macoun 1902, p. 128); also C. Baffin: Kekerten (Stein 1890, p. 99, sub nom. *C. fimbriata* γ *tubaeformis*), Cape Searle (Dickie 1869, p. 465).

127. **Cladonia furcata** (Huds.) Schrad.

Reported from "Lancaster Sound"[1] (Dickie 1871, p. 34); and "Smith Sound" (var. *racemosa* (Hoffm.) Flk., James 1863, p. 96).

128. **Cladonia gracilis** (L.) Willd.

This species was not found in Dr. Polunin's collection, although we should have expected it. It has been recorded from Labrador: f. *valida* (Arnold 1896, p. 4), Nachvak, f. *chordalis* (Cummings 1902, p. 199), Clearwater Lake, f. *hybrida* (Macoun 1902, p. 129); C. Baffin: Kekerten, f. *chordalis* (Stein 1890, p. 99), Cape Adair, Home Bay, and Cape Searle (Dickie 1869, p. 465); Kazan River (Lynge 1915, p. 17); Southampton Island (Sutton ex Raup 1936, p. 5). [Smith's report (1934, p. 202) from Akpatok Island stands for *Cladonia elongata* (*See* above)].

Cladonia papillaria (Ehrh.) Hoffm. Labrador: Blanc Sablon (Arnold 1896, p. 5).

Cladonia reticulata (Russ.) Vain. "*C. reticulata* Russ., *C. lacunosa* Bor., in Labrador von Stearns gesammelt, Tuck. Syn. p. 251" (Arnold 1896, p. 4).

Cladonia strepsilis (Ach.) Vain. Labrador: Blanc Sablon (Arnold 1896, p. 5).

Cladonia turgida (Ehrh.) Hoffm. Labrador: Anse Sablon (Anon. 1907, p. 87).

Cladonia verticillata Hoffm. "Labrador" (Arnold 1896, p. 5).

Stereocaulon Schreb.

This genus is extremely "difficult" even when the plants to be determined are perfect; if untypical plants are submitted one is often tempted to leave them out of consideration. The following very great material has been determined and checked time and time again. I can do no more; but I do not pretend to have determined every plant in an authoritative manner. Nevertheless I hope that one or two (or perhaps several?) mistakes will not change the validity of my remarks on the general distribution of the species in question.

129. **Stereocaulon alpinum** Laur.

Burwell; Port Harrison; Wolstenholme, Wakeham Bay; South Bay in Southampton Island; Chesterfield; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet, Arctic Bay; Dundas Harbour; Craig Harbour.

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

S. alpinum is undoubtedly the commonest *Stereocaulon* in the Canadian Eastern Arctic, as was to be expected. There are numerous literary records of it, viz., Schlechtendahl's (1835-6, p. 78) *Stereocaulon botryosum* from Labrador is possibly this species; surer reports come from Akpatok Island (Smith 1934, p. 202); C. Baffin: Kivitung (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167); several places in N. Baffin (Lynge 1935, p. 17); Grant Land: Discovery Harbour and Mount Discovery (Fries 1879, p. 352, sub syn. *Stereocaulon tomentosum* β *alpinum*). Possibly some of the reports of *Stereocaulon paschale* also belong here.

130. **Stereocaulon rivulorum** Magnusson, Göteborgs Vet. och Vitt.-Samh. Handl., XXX, No. 7, p. 63 (1926); Lynge, Lich. Nov. Zeml., p. 164, Pl. VI, figs. 5-6 (1928).

Pangnirtung, Clyde; Craig Harbour.

All the plants are sterile, and, accordingly, difficult to distinguish from *Stereocaulon alpinum.* My experiences in other arctic regions suggest that the species may be fairly common also in the present area.

131. **Stereocaulon paschale** (L.) Ach.

Cartwright; Port Harrison; Lake Harbour; Pangnirtung.

Only sterile plants were seen. This species is undoubtedly less common in the region, or at least in the Canadian Eastern Arctic proper, than *Stereocaulon alpinum.* Several of its literary reports probably stand for the latter species. Labrador: *no loc.* (Schlechtendahl 1835-6, p. 78), Okak (Meyer 1830, p. 8), Blanc Sablon (Hulting 1896, p. 192), Indian Harbour and Eagle River (Macoun 1902, p. 123), Anse Sablon, Nain, and Hopedale (Anon. 1907, p. 87); S. Baffin: "on rocks" (Macoun 1902, p. 123); C. Baffin: Kekerten and Kivitung (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167), Davis Strait, "west side, common" (Dickie 1869, p. 465); Melville Island (Brown 1824, p. cccvii); Melville Peninsula: Igloolik and Winter Island (Hooker 1825, p. 425); "Lancaster Sound"[1] (Dickie 1871, p. 34); Ellesmere: Hayes Sound (Fries 1879, p. 352); Southampton Island (Sutton ex Raup 1936, p. 5).

132. **Stereocaulon denudatum** Flk.

Hebron; Cape Dorset; Pangnirtung, Clyde.

It is impossible to judge the distribution of *Stereocaulon denudatum* from these few localities. To be sure, there are some records in the literature, but we do not know whether they stand for this species or for *S. arcticum* (*q.v.*).

Recorded from Labrador: Nachvak and Mount Faunce (Cummings 1902, p. 199), Clearwater River, Venison Tickle, Eagle River, and Indian Harbour (Macoun 1902, p. 124); North Bluff (S. Baffin); and Nottingham Island (Macoun 1902, p. 124); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); "Smith Sound" (James 1863, p. 96), Cape Sabine, β *pulvinatum* (Fries 1879, p. 352).

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

133. **Stereocaulon arcticum** Lynge, Norske Vid.-Akad. Skr. I. Math.-Nat. Kl. No. 6, p. 69 (1938).

Burwell; Wolstenholme; Lake Harbour; Craig Harbour.

The localities represented in this collection are not numerous, but anyhow they suggest that the species is widely distributed in the region.

During my work with lichens from Jan Mayen and Spitsbergen, my attention was caught by this species. When young its phyllocladia resemble those of *Stereocaulon denudatum*—they are flat and button-like, with a pale margin; in old plants the phyllocladia become more convex, and the pale margin disappears. Accordingly, it is advisable to study the phyllocladia near the apex, and on the underside of the podetia. Young plants are well covered with a dense tomentum, as in *Stereocaulon alpinum,* but this disappears by and by in old plants, which altogether rather resemble *S. denudatum.*

The gonidia of the cephalodia proved to be of special interest. In *Stereocaulon alpinum* we have *Nostoc,* in *Stereocaulon denudatum* we have *Stigonema.* In the present species we return to *Nostoc.* I have examined so many plants that I have come to regard this character as constant.

An examination of our very large arctic material of *"Stereocaulon denudatum"* (sens. lat.) showed that *S. arcticum* is widely distributed, and I was glad to find it also in the present collection.

The following 4 species of *Stereocaulon* were lacking in this collection of Dr. Polunin's, but they have been recorded from Labrador or the Canadian Eastern Arctic, viz.:

134. **Stereocaulon botryosum** Ach.

Reported from Labrador: Okak (Meyer 1830, p. 8); Melville Peninsula: Danish Island (Lynge 1935, p. 17); Port Kennedy and Cape Osborne (Hooker 1861, p. 87); also Ellesmere: Alexandra Haven (Fries 1879, p. 352, sub syn. *Stereocaulon evolutum* β *fastigiatum*).

Stereocaulon condensatum Hoffm. Labrador: Clearwater Lake (Macoun 1902, p. 124). This report should be reconsidered.

135. **Stereocaulon coralloides** Fr.

This has been recorded from Labrador: Nain and Clearwater Lake (Macoun 1902, p. 123); "Chidley Peninsula" (Anon. 1907, p. 87); also N. Quebec: Digges Island (Macoun 1902, p. 123).

136. **Stereocaulon tomentosum** Fr.

Reported from Labrador: Mount Faunce, "3500-4000 f., evidently quite common" (Cummings 1902, p. 199, but this height suggests *Stereocaulon alpinum* rather than *S. tomentosum*), Indian Harbour (Macoun 1902, p. 123); "Cumberland Sound" (Tuckerman 1879, p. 167).

UMBILICARIACEAE

137. **Omphalodiscus virginis** (Schaer.) Schol., Nyt Magazin f. Naturvid., LXXV, p. 25, Pl. I, fig. 6 (1934).

Gyrophora virginis (Schaer.) Frey

Umbilicaria virginis Schaer.

Burwell; Arctic Bay (2563b-1, 2575a-4).

Previously recorded from ?"Labrador (Macoun 1902, p. 78); [?] Digges Island (Macoun 1902, p. 78)"[1]; Davis Strait "*Umbilicaria hirsuta* . . . East and west sides; abundant in Cumberland Sound, specimens measured seven inches across", but this size indicates *virginis*, not *hirsuta* (Dickie 1869, p. 466); ? "Lancaster Sound"[2] (Dickie 1871, p. 34, sub nom. *Umbilicaria hirsuta*), ? Port Kennedy (Hooker 1861, p. 87, sub nom. *Umbilicaria hirsuta*); Ellesmere: ? "Cape Sabine and Cape Columbia (Fries 1879, p. 354)."[3]

138. **Gyrophora proboscidea** (L.) Ach.

Port Harrison; Wakeham Bay; Chesterfield; Cape Dorset, Lake Harbour; Pangnirtung; Pond Inlet (here also collected by Frère Bazin); Craig Harbour.

This very common species has been recorded by many authors, from Labrador: "hier und da" (Hulting 1896, p. 188), Forteau (Arnold 1896, p. 7), Mount Faunce, "3500-4000 f." (Cummings 1902, p. 198), Battle Harbour and Sampsons Island (Macoun 1902, p. 79); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 5); Digges Island (Macoun 1902, p. 79); S. Baffin (Macoun 1902, p. 79); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); N. Baffin: Mitimatalik (Lynge 1935, p. 19); Melville Island (Brown 1824, p. cccv); Port Kennedy (Hooker 1861, p. 87); Ellesmere: Alexandra Haven (Fries 1879, p. 355).

139. **Gyrophora hyperborea** (Hoffm.) Ach.

Port Harrison; Wakeham Bay; Chesterfield; Pangnirtung, Clyde; Dundas Harbour; Craig Harbour.

One of the commonest Gyrophorae, repeatedly recorded from the region. Labrador: "hier und da" (Hulting 1896, p. 188), L'Anse au Loup (Arnold 1896, p. 6), Blanc Sablon (Cummings 1902, p. 199); Cape Chidley ("Chudleigh"); and Clearwater Lake (Macoun 1902, p. 80); Akpatok Island (Smith 1934, p. 202); S. Baffin: (Macoun 1902, p. 80); C. Baffin: "Cumberland Sound" (Dickie 1869, p. 467, and Tuckerman 1879, p. 167); N. Baffin; and Melville Peninsula; and Sentry Island,[4] etc., in Keewatin (Lynge 1935, p. 19); "Lancaster Sound"[2] (Dickie 1871, p. 34), Port Kennedy (Hooker 1861, p. 87); "Smith Sound" (James 1863, p. 96, with a ?).

140. **Gyrophora arctica** Ach.

Wolstenholme.

This species has repeatedly been recorded from the region, where it is supposed to be more common than Dr. Polunin's single find would suggest. Labrador: *no loc.* (Macoun 1902, p. 79), East and West St. Modeste

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[1] I have put Macoun's reports in quotes, as in the place cited they are given instead under "*Umbilicaria cylindrica*". Professor Lynge doubtless had a good reason for so changing the citation; but still it seems safer to query the record. (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[3] Here again I have felt it safer to indicate some doubt, as the only *Gyrophora* cited by Fries from both these places is *G. cylindrica* β *simplex*. If Professor Lynge had seen the specimen and revised the determination he would presumably have followed the directions and indicated as much. (N.P.)

[4] About 61° 7′ N. and 94° 5′ W. on the west coast of Hudson Bay. (N.P.)

(Hulting 1896, p. 188), East St. Modeste and Red Bay (Arnold 1896, p. 6); Manitoba: Churchill (Lynge 1935, p. 19); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); "Lancaster Sound"[1] (Dickie 1871, p. 34); Ellesmere: Cape Sabine (Fries 1879, p. 355).

141. **Gyrophora torrefacta** (Lightf.) Cromb.

Syn. *Gyrophora erosa* (Web.) Ach., incl. its var. *torrefacta* (Lightf.)—cf. Lynge (1937, p. 110).

Burwell (1114a-10); Pangnirtung.

This species is supposed to be more common than Dr. Polunin's small material suggests. It has been recorded from Labrador: *no loc.* (Macoun 1902, p. 80, as *"Umbilicaria erosa"*), L'Anse au Clair (Hulting 1896, p. 188), Red Bay (as *"Gyrophora torrida* (Med. C rub.)" Arnold 1896, p. 7); S. Baffin: Upper Savage Islands (Hooker 1825, p. 421); C. Baffin: "Cumberland Sound" (Dickie 1869, p. 467, and Tuckerman 1879, p. 167); N. Baffin: Mitimatalik (Lynge 1935, p. 18); Melville Peninsula; and Yathkyed Lake (Lynge 1935, p. 18); Ellesmere: Alexandra Haven (Fries 1879, p. 355).

142. **Gyrophora vellea** (L.) Ach.

South Bay in Southampton Island; Wolstenholme; Craig Harbour.

Gyrophora (*Umbilicaria*) *vellea* is supposed to be fairly common, at least in the southern part of the region. Labrador: *no loc.* (Macoun 1902, p. 81), Nachvak (Cummings, 1902, p. 199); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167), "Davis Strait, west side" (Dickie 1869, p. 467); Manitoba: Churchill (Lynge 1935, p. 19); "Lancaster Sound"[1] (Dickie 1871, p. 34); also "From Mr. Edwards's collection" (Hooker 1825, p. 422).

143. **Gyrophora cylindrica** (L.) Ach.

var. **delisei** Despr.

Burwell; Cape Dorset; Clyde; Chesterfield.

var. **fimbriata** Ach.

Burwell; Cape Dorset, Lake Harbour; Chesterfield.

Gyrophora cylindrica is a very common species in the region. The two varieties are not well separated taxonomically in the Arctic; moreover, as their habitats are similar they are often found together.

Gyrophora cylindrica has been recorded from Labrador: Battle Harbour, Bolster Rocks, Red Bay, and Long Island (Hulting 1896, p. 188), West St. Modeste (Arnold 1896, p. 7, sub nom. *Gyrophora delisei,* and Cummings 1902, p. 198); also Akpatok Island (Smith 1934, p. 202); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 168); Melville Peninsula: Danish Island, both varieties (Lynge 1935, p. 18); Ellesmere: Cape Sabine (Fries 1879, p. 354).

Several other Gyrophorae (*s.l.*), which were not found in Dr. Polunin's present collection, have been recorded from Labrador and the Canadian Eastern Arctic, viz.:

Gyrophora (or *Umbilicaria*) *"anthracina* var. *reticulata* Schaer." *See Umbilicaria lyngei* (below).

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

144. **Gyrophora deusta** (L.) Ach.

Reported from Labrador: L'Anse au Clair (Arnold 1896, p. 7), "In Mr. Edwards's collection" (Hooker 1825, p. 421). This is rather a "southern" species, but is nevertheless to be expected from more localities.

Gyrophora discolor Th. Fr. *See Umbilicaria lyngei* (below).

Gyrophora hirsuta (Sw.) Ach. *See Omphalodiscus virginis* (above).

Gyrophora muehlenbergii Ach. Labrador: L'Anse au Clair (Hulting 1896, p. 188), Clearwater River (Macoun 1902, p. 81).

Gyrophora polyphylla (L.) Funck. "Labrador" (Macoun 1902, p. 79).

145. **Gyrophora rigida** DR.

Recorded from Labrador: *no loc.* (Macoun 1902, p. 79, sub syn. *Umbilicaria anthracina*); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167, sub syn. *Umbilicaria anthracina*); Melville Peninsula: ? South shore of Fury and Hecla Straits, ? Igloolik, and ? Repulse Bay (Hooker 1825, p. 421, sub nom. *Gyrophora tesselata,* perhaps this species).

146. **Umbilicaria lyngei** Schol., Nyt Magazin for Naturvidensk., LXXV, p. 19, Pl. I, fig. 1 (1934).

Chesterfield; Cape Dorset; Arctic Bay; Craig Harbour.

It is possible that the records of *Gyrophora* (or *Umbilicaria*) *tesselata, reticulata,* and *discolor* from this region stand for the present species. If so, it has been recorded from the following localities: N. Baffin: ? Port Bowen, as "*Gyrophora tesselata* Ach." (Hooker 1826, pp. 130-1), Mitimatalik (Lynge 1935, p. 18); ? Nottingham Island, as "*Umbilicaria anthracina* var. *reticulata* Schaer." (Macoun 1902, p. 79); Ellesmere: ? Mount Dean, ? Westward-Ho Valley, ? Cape Union, ? Cape Sabine, and ? Payer Harbour,[1] all as "*Gyrophora discolor* Th. Fr." (Fries 1879, p. 355)—it is, however, not impossible that Fries's reports really stand for *Omphalodiscus decussatus* (Vill.) Schol.

147. **Umbilicaria pennsylvanica** Hoffm.

This has been recorded from "Labrador" (Macoun 1902, p. 82), and "Cumberland Sound, rare" (Dickie 1869, p. 466).

Umbilicaria pustulata (L.) Hoffm. Labrador: L'Anse au Clair and Forteau Bay, f. *labradorensis* Hult. (Hulting 1896, p. 193), L'Anse au Clair, f. *papulosa* (Arnold 1896, p. 6).

ACAROSPORACEAE

148. **Sporastatia cinerea** (Schaer.) Kbr.

Biatorella cinerea (Schaer.) Th.Fr.

Burwell; Cape Dorset, Lake Harbour.

This species was scarce in the present collection; it is generally of only scattered occurrence in nature. Previously recorded from Melville Peninsula: Danish Island (Lynge 1935, p. 19).

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[1] Like Brevoort island, this locality is near Cape Sabine. Other stations not listed in the introduction to Part I but occurring in the present report include Westward-Ho Valley (82° 41′ N.), Black-Cliffs Bay (82° 31′ N.), Dean Mountain (82° 26′ N.), Cape Union (82° 15′ N.), Lincoln Bay (82° 8′ N.), Mount Stephenson (81° 43′ N.) (N.P.)

149. **Sporastatia testudinea** (Ach.) Mass.

Biatorella testudinea (Ach.) Mass.

Biatorella coracina (Sommerf.) Lynge

Clyde; Arctic Bay (2576a-2, 2576a-4, 2576a-5); Dundas Harbour (2501a-12, 2509a-8).

Previously recorded from Akpatok Island (Smith 1934, p. 202, sub nom. *Biatorella morio*); Melville Peninsula: Danish Island (Lynge 1935, p. 19); Grant Land: Egerton Valley, Westward-Ho Valley, Floeberg Beach, and Cape Union (Fries 1879, p. 360).

As it is generally one of the commonest lichens it the Arctic, and not easily overlooked, we should have expected more records for *Sporastatia testudinea.*

150. **Sarcogyne simplex** (Dav.) Nyl.

A third species of *Biatorella* (s.l.), not present in Dr. Polunin's collection, viz., *Sarcogyne simplex* (Dav.) Nyl., has been recorded from Ellesmere: Mount Stephenson, Floeberg Beach, and Cape Sabine (Fries 1879, p. 360).

151. **Acarospora molybdina** (Wahlenb.) Trev.

Arctic Bay. A nitrophilous species, which suggests a habitat richly manured by birds.[1]

152. **Acarospora sinopica** (Wahlenb.) Kbr.

Lake Harbour.

153. **Acarospora chlorophana** (Wahlenb.) Mass.

This has been recorded from Port Kennedy (Hooker 1861, p. 87, sub syn. *Lecanora chlorophana*); and "Westward-Ho Valley" in Ellesmere (Fries 1879, p. 357).

Acarospora glaucocarpa (Wahlenb.) Kbr. f. *distans* Arn. Labrador: L'Anse au Mort (Arnold 1896, p. 8).

PERTUSARIACEAE

154. **Pertusaria oculata** (Dicks.) Th. Fr.

Cape Dorset; Pangnirtung, Clyde.

This *Pertusaria* is generally common in arctic and subarctic regions. In our area it has previously been recorded from Akpatok Island (Smith 1934, p. 202); "Cumberland Sound" (Tuckerman 1879, p. 167); and Melville Peninsula: Igloolik (Hooker 1825, p. 425, sub nom. *Isidium oculatum*).

155. **Pertusaria panyrga** (Ach.) Mass.

South Bay in Southampton Island; Lake Harbour. Not supposed to be common; there were no previous records of it from the region.

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[1] There are, however, no regular 'bird-cliffs' at Arctic Bay. (N.P.)

156. **Pertusaria dactylina** (Ach.) Nyl.

South Bay in Southampton Island; Wolstenholme; Cape Dorset, Lake Harbour; Clyde; Pond Inlet (at the last-mentioned place also collected by Frère Bazin).

I was astonished to find so many plants in Dr. Polunin's collection, as the species is generally not at all common in arctic and subarctic regions. Previously recorded only from Labrador: L'Anse au Mort and L'Anse au Loup (Arnold 1896, p. 11—cf. also Cummings 1902, p. 199).

157. **Pertusaria coriacea** Th. Fr.

Churchill; South Bay in Southampton Island; Burwell; Cape Dorset; Clyde; Arctic Bay; Dundas Harbour; Craig Harbour.

The great number of plants suggests a common species, as was to be expected. Previously recorded from Labrador: L'Anse au Mort (Arnold 1896, p. 11, sub nom. *Pertusaria subobducens* Nyl.); also Grant Land: Westward-Ho Valley (Fries 1879, p. 359). Reports of *Pertusaria glomerata*, which was not found in Dr. Polunin's collection, may possibly stand for the present species.

158. **Pertusaria pertusa** (L.) Tuck.

Lake Harbour.

Fertile glomerules 1·5-2 mm. in diameter, with several punctiform, black ostioles. Spores geminate, very thick-walled, large, 120-125μ long. Thallus with KOH yellow. On the old wood of a conifer, very scarce.

159. **Pertusaria pruinifera** Erichsen, *n. sp.*

Dundas Harbour.

"Thallus modice crassus, cinereus, opacus, albido-pruinosus, verrucoso-areolatus, effusus, contiguus, hypothallo indistincto. Areolae irregulariter rotundatae angulataeve, 0·5-1·0 mm. latae, verrucosae-convexae. Passim areolae majores soraliferae. Soralia rotundata, margine thallode tenui, leviter elevato cincta, disco ad 0·9 mm. lato, plano, clare griseo-viridi, subtiliter granulato. Gonidia globosa, 10-15μ lata vel oblonga, circiter 16μ longa et 12μ lata, laete viridia, conferta, KOH—, $CaCl_2O_2$—, KOH + $CaCl_2O_2$—, P—. Sapor mitis. Apothecia pycnidiaque desunt. Saxicola.

"Früchte zum mindesten auf dem nur kleinen Belegstück nicht vorhanden. Das Soralinnere zeigte auch bei Zusatz von wässeriger Jodlösung keine Schlauchspuren. Vorkommen an Urgestein .

"HAB. östliches arktisches Kanada; Devon Island: Dundas Harbour, 7/9/1936, leg. Nicholas Polunin als Nr. 2498a-16.

"Bemerkungen: Das sterile Lager macht den Eindruck einer *Pertusaria*, zu der man es ziehen muss, so lange nicht bei späterem Auffinden von Früchten eine andere Gruppierung sich als notwendig erweisst. Wegen der Soralbildung gehört *Pertusaria pruinifera* zur Untergattung *Variolaria* (Sch.) Erichs. und zwar zur Sektion *Variae* Erichs. (vergl. Erichsen Pertusariaceae in Rabenh. Krypt.-Flora von Deutschland, etc., IX, 5, 1, p. 526 (1936)).

"Einige äussere Ahnlichkeit besteht mit der ebenfalls steinbewohnenden vielgestaltigen *Pertusaria ocellata* Kbr. und besonders deren subsp. *silesiaca* Erichs. Doch unterscheidet sich diese Art sofort dadurh, dass sie sorediösen

Bildungen Fruchtsorale sind, die unter dem Mikroskop, besonders bei Zusatz von J stets blau sich färbende Schläuche zeigen, wenn auch oft nur in Spuren. Deshalb gehört *Pertusaria ocellata* auch zu einer anderen Sektion : *Multipunctae* Erichs. Makroskopisch schon unterscheidet sich die ähnlichste Form: subsp. *silesiaca* durch dunkelgraues, nie bereiftes Lager und reinweisse Soralscheiben, zeigt auch gegen KOH und KOH + $CaCl_2O_2$ stets eine deutliche, wenn auch leichte bräunliche Reaktion.

"Die zur Sekt. *Variae* gehörende *Pertusaria globulifera* var. *subflotowiana* Erichs. von Gestein hat gleichfalls dunkleres, unbereiftes Lager und reinweisse, hoch gewölbte Sorale.

"Der Beleg wurde mir von Dr. B. Lynge in Blindern bei Oslo zur Bestimmung zugesandt und befindet sich im Herb. Harvard."

Some other Pertusariae have been recorded from Labrador and the Canadian Eastern Arctic, viz.:

Pertusaria bryontha (Ach.) Nyl. Labrador: L'Anse au Mort (Macoun 1902, p. 118).

Pertusaria globulifera (Turn.) Mass. f. *saxicola* Nyl. Labrador: L'Anse au Mort (Arnold 1896, p. 12).

160. **Pertusaria glomerata** (Ach.) Schaer.

This has been reported from Labrador: Bolster Rocks (Hulting 1896, p. 191), Forteau (Macoun 1902, p. 121); S. Baffin (Macoun 1902, p. 121). These records may possibly stand for *Pertusaria coriacea* (*See* above).

Pertusaria protuberans Sommerf. Labrador: L'Anse au Clair (Arnold 1896, p. 11).

"*Lecanora illimata* Ach . . . in Mr. Edwards's collection" (Hooker 1825, p. 422). According to Th. Fries (1860, p. 134): "omnino est atypica, in '*Isidium*' transitum praebens".

LECANORACEAE

161. **Lecanora atra** (Huds.) Ach.

Wolstenholme, very scarce.

Previously collected at Cape Adair in C. Baffin (Dickie 1869, p. 467); and in "Lancaster Sound"[1] (Dickie 1871, p. 34). But there is little doubt that it is much more common than these few reports would suggest.

162. **Lecanora campestris** Schaer.

Cf. Magnusson, Beiträge zur Syst. d. Flechtengr. Lecanora subfusca, Medd. från Göteb. Bot. Trädgård, VII, pp. 74 and 85 (1932).

Dundas Harbour, on rocks.

Apothecia obscure fuscescentia, bene convexa, corticata, cortex in parte inferiori circiter 25-35μ altus, KOH flavescens. Hymenium 75-80μ altum, superne fuscum. Paraphyses (in KOH) distincte incrassatae. Sporae simplices, 12-15 x 7-8μ. Hyphae crystallis parvis, angulatis instructae.

Hymenium J e caeruleo vinisum (sectio tenuis !), hypothecium J subpersistente caerulescens, thallus KOH (sat. dilute) flavescens.

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[1] Actually gathered on Philpots Island, lat. 74° 44′ N. (N.P.)

A plant collected at Wolstenholme, Quebec, on the south shore of Hudson Strait, is supposed to belong to the same species; but it is a small plant, and the determination is not certain. Previously recorded from Labrador: L'Anse au Clair (Arnold 1896, p. 8), and possibly from Grant Land: Discovery Bay (Fries 1879, p. 358, as *"Lecanora subfusca*....saxicolous form, approaching to var. *cenisea* (Ach.)").

163. **Lecanora epibryon** Ach.

Churchill; South Bay in Southampton Island; Burwell; Lake Harbour; Pond Inlet; Dundas Harbour; Craig Harbour.

This is one of the commonest muscicolous lichens all over the Arctic. It has been recorded by many previous authors, but some of the reports are merely of *"Lecanora subfusca"*, without indication of the substratum. Such reports may stand for other species of the *Lecanora subfusca* group.

Labrador: L'Anse au Mort (Hulting 1896, p. 189, and Arnold 1896, p. 8); Akpatok Island (Smith 1934, p. 202); C. Baffin: ? "Cape Searle, etc., frequent" (Dickie 1869, p. 467—as *L. subfusca,* without substratum); ? Port Kennedy (Hooker 1861, p. 87—as *L. subfusca,* without substratum); ? "Lancaster Sound"[1] (Dickie 1871, p. 34—as *L. subfusca,* without substratum); Melville Peninsula: Igloolik (Hooker 1825, p. 422), Vansittart and Georgina Islands (Lynge 1935, p. 19); Wager Inlet; also Boothia Felix Peninsula, King William Land, and Dolphin and Union Strait (Lynge 1935, pp. 19-20), Gjøa Harbour (Lynge 1921, p. 5); Ellesmere: Floeberg Beach, Westward-Ho Valley, Walrus Island, and Alexandra Haven (Fries 1879, p. 358).

164. **Lecanora bicincta** Ram.

Chesterfield; Cape Dorset.

Because of the habit, etc., these plants must be put in the *Lecanora sordida* group. The apothecia are $CaCl_2O_2$ yellow, the thallus KOH yellow and P citrine. *Lecanora subcarnea* is out of the question, because of its intensely cinnabarine reaction with P.

The thallus of the present material is almost white and very thin; the pruinose apothecia are, therefore, prominent. They are convex, and there is a distinct black 'margo proprius' inside the white 'margo thallinus'. This agrees with descriptions by Th. M. Fries (1871, p. 246) and by Nylander (1861, p. 159) of var. *bicincta* (Ram.), which is regarded as a proper species by many eminent lichenologists (cf. Zahlbruckner, Cat. Lich. V, p. 398).

The plant I collected in Novaya Zemlya in 1921 has a considerably thicker thallus, but apart from that it agrees fairly well with the above (cf. Zahlbruckner, *Lecanora,* in Lynge 1928, p. 24). I have seen no type material.

165. **Lecanora dispersa** (Pers.) Röhl.

Dundas Harbour, on a calcareous stone. No visible thallus. Ripe apothecia 0·5-0·8 mm. in diameter, with an epruinose, almost black plane disk, and a thick, pruinose, not crenulated margin.

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[1] Actually gathered on Philpots Island, lat. 74° 44′ N. (N.P.)

Previously recorded from Labrador: L'Anse au Loup and L'Anse au Mort (Arnold 1896, p. 9); also Ellesmere: "82° 45' N.", Westward-Ho Valley, Floeberg Beach, Egerton Valley, Discovery Bay, and Cape Sabine (Fries 1879, p. 359).

166. **Lecanora polytropa** (Ehrh.) Rabenh.

var. **illusoria** (Ach.) Leighton

Cape Dorset; Clyde.

var. **leucococca** (Sommerf.) Th. Fr.

Burwell; Wolstenholme; Pangnirtung; Arctic Bay.

This species, which is certainly quite as common here as in other arctic and subarctic regions, has repeatedly been recorded from our area. Labrador: "pl. vulgaris et f. *illusoria*, nicht selten und an mehreren Orten" (Arnold 1896, p. 9); Melville Peninsula; and two places in Keewatin (Lynge 1935, p. 20); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub syn. *Lecidea polytropa*); Grant Land: Cape Union, Westward-Ho Valley, Floeberg Beach, and Discovery Bay (Fries 1879, p. 359, sub syn. *Lecanora varia* β *polytropa*).

167. **Lecanora intricata** (Schrad.) Ach.

Burwell; Wolstenholme.

Recorded once from Labrador, without locality (Arnold 1896, p. 9).

168. **Lecanora badia** (Hoffm.) Ach.

Wolstenholme (var. *cinerascens* Flotow); Dundas Harbour.

Previously recorded from Labrador: Battle Harbour and Red Bay (Hulting 1896, p. 189, and Arnold 1896, p. 9); Yathkyed Lake (Lynge 1935, p. 20).

169. **Lecanora verrucosa** Ach.

Dundas Harbour; Craig Harbour.

This species, which is generally common in arctic and subarctic regions, has previously been recorded from Akpatok Island (Smith 1934, p. 202), Southampton Island; the Magnetic North Pole,[2] and Dolphin and Union Strait (Lynge 1935, p. 20); also Grant Land: Floeberg Beach and Westward-Ho Valley (Fries 1879, p. 359).

170. **Lecanora lesleyana** (Darbishire) Paulson, Jour. Bot., LXIII, p. 192 (1925).

Lecanora lyngei Zahlbr. *p.m.p.*

Dundas Harbour.

Previously reported from Goose Fiord in Ellesmere (Darbishire 1909, p. 34, sub syn. *Aspicilia lesleyana*).

171. **Lecanora** (Aspicilia) **canadensis** Lynge & Magn., *n. sp.*

Arctic Bay.

Thallus (fragmentum solum) crassitudine mediocri, fissuris profundis in areolis angulatis vel subrotundatis, 0·35-0·6 (-0·8) mm. latis, contiguis

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[1] Collected on Philpots Island, lat. 74° 44' N. (N.P.)

[2] *See* footnote (1) on p. 320. (N.P., November 1946.)

vel in aetate subdiscretis, fere columnaribus divisus. Areolæ steriles depresse convexae, irregulariter rimulosae vel rugulosae, cinereo-albidae vel osseae, subnitidae, sorediis isidiisque destitutae. Hypothallus obscurus ad peripheriam thalli et intra areolas plus minusve distincte visus.

Apothecia numerosa vel numerosissima, diam. 0·5-0·7 mm., in areolis vulgo singularia, interdum bina. Discus concavus vel planus, ater, epruinosus, margine sat crasso intergo circumdatus. Hypothecium (in centro) circiter 25μ. Hymenium 75-80 (-85)μ altum, incoloratum, superne tamen (12-15μ) obscuratum, cinereo- vel viridulo-fuscescens, strato incolorato, amorpho, rupto tectum. Paraphyses arcte cohaerentes, apicem versus distincte moniliformes (HCl), basin versus 1·5μ crassae, in apice incrassatae, 3-3·5μ. Asci pyriformes, membrana superne mediocriter incrassata, sporas biserialiter continentes. Sporae parvulae: 12-13 (-14) x 7·5-8·5μ.

Excipulum in parte marginali apothecii elatum, epithecio concolor, hyphis flabelliformiter radiatis formatum.

Pycnides frustra quaesitae.

Hymenium J e caeruleo fusco-flavescens, hypothecium J subecoloratum, medulla J—, KOH— vel diulte flavescens, $CaCl_2O_2$—. Hyphae granulis angulatis dense instructae, cortex areolarum cellulosus.

HAB. Baffin Island: Arctic Bay, Sept. 8-11, 1936, leg. Nicholas Polunin No. 2563b-4.

At first the apothecia are immersed, being only dark punctifications in the areolæ. Ripe apothecia fill up the whole areola, leaving only a narrow annulus; they are then more or less confluent, separated only by the deep cracks between the areolæ, and have the appearance of being elevated, i.e., placed at the upper end of the almost columnar areolæ.

Lecanora canadensis is not unlike *Lecanora arctica* Lynge (1937, p. 132), from which it is best distinguished by its small spores and lower hymenium—in the latter species 15-20 x 10-12 (-14) and 100-110 (125)μ, respectively. These two species suggest a western section of this large subgenus, perhaps with several species.

172. **Lecanora alpina** Sommerf.
Burwell.

173. **Lecanora myrini** (Fr.) Nyl.
Cape Dorset (2381a-28).

The thallus is not well developed, and the apothecia are morbid and destroyed. The chemical reaction, J caerulescens, KOH sanguinea, agrees with the present species, but the determination of this poor plant is not quite certain.

A very considerable number of Lecanorae not found in Dr. Polunin's collection have been reported from the Canadian Eastern Arctic or regions not far to the south or west:

174. **Lecanora albescens** (Hoffm.) Flk.

Recorded from Ellesmere: Floeberg Beach, Westward-Ho Valley, Mount Stephenson, and Cape Sabine; also var. *caesioalba* from Floeberg Beach (Fries 1879, pp. 358-9).

Lecanora amphibola (Ach.) Magn. Labrador: Red Bay, East and West St. Modeste, Capstan Island, and Blanc Sablon (Arnold 1896, p. 10, sub nom. *Lecanora caesiocinerea* Nyl.).

Lecanora atrosulphurea (Wahlenb.) Ach. Labrador: L'Anse au Clair, and its f. *ochraceorubescens* Arn. from Forteau and L'Anse au Clair (Arnold 1896, p. 9). Arnold's description of the latter might suggest a related American species.

175. **Lecanora calcarea** (L.) Sommerf.

Reported from Grant Land: Floeberg Beach and Dobbin Bay (Fries 1879, p. 359). The specimens should be compared with *Lecanora lesleyana*, or with other Arctic Aspiciliae. ["Akpatok Island" (Smith 1934, p. 202), *See* under *Lecanora gibbosa* and L. ? *mastoidea.*]

Lecanora castanea (Hepp) Th. Fr. Labrador: Clearwater Lake (Macoun 1902, p. 149, sub syn. *Biatora castanea*). It should be looked for in Arctic Canada, where it ought also to be found.

Lecanora cenisea Ach. Labrador: Blanc Sablon, L'Anse au Clair, Forteau, and Red Bay (Arnold 1896, p. 8).

Lecanora chlarona (Ach.) Nyl. Labrador: L'Anse au Clair (Arnold 1896, p. 8).

Lecanora cinerea (L.) Sommerf. Labrador: Red Bay (Arnold 1896, p. 10); also Baker Lake (Lynge 1935, p. 20).

Lecanora cinereorufescens (Ach.) Hepp. Labrador: "häufig" (Arnold 1896, p. 11), Chimney Cove (Macoun 1902, p. 114).

176. **Lecanora contractula** Nyl.
var. **feracissima** Th. Fr.

Reported only from Wager Inlet (Lynge 1935, p. 21).

Lecanora expallens Ach. Labrador: Forteau, L'Anse au Loup, and Capstan Island (Arnold 1896, p. 10).

177. **Lecanora flavida** Hepp

Recorded from Ellesmere: Winter quarters of H.M.S. *Alert*[1], and Cape Sabine (Fries 1879, p. 359).

178. **Lecanora frustulosa** (Dicks.) Ach.

Recorded from "Cumberland Sound" (Dickie 1869, p. 467); and Port Kennedy (Hooker 1861, p. 87).

Lecanora fuscescens (Sommerf.) Nyl. Labrador: L'Anse au Loup (Arnold 1896, p. 12).

179. **Lecanora gelida** (L.) Ach.

Reported only from Port Kennedy (Hooker 1861, p. 87, sub syn. *Squamaria gelida*).

180. **Lecanora gibbosa** (Ach.) Nyl., *s.l.*

Recorded from Labrador: Chimney Cove (Macoun 1902, p. 114); Akpatok Island (Smith 1934, p. 202); Baker Lake and Yathkyed Lake (Lynge 1935, p. 20); Ellesmere: Floeberg Beach (incl. "var. β *squamata*"

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

(*? Lecanora perradiata* Nyl.)), Cape Union, Discovery Bay, Cape Sabine (Fries 1879, p. 359). *Lecanora gibbosa* represents a group, rather than a species, and most probably the above reports cover several species.[1]

181. **Lecanora ?mastoidea** Lynge

Smith (1934, p. 202) reported *Lecanora calcarea* from Akpatok Island. I have examined the plant and found: "apothecia haud matura, hymenium omnino incoloratum, sporae (paucas vidimus) 17·5-20 x 9-12μ, paraphyses apice non incrassatae, hyphae medullares non adspersae". It cannot belong to the *calcarea* group, which has quite another thallus, and very adsperse hyphae. It is most probably a plant of the *gibbosa* group, which is represented by several species in the Canadian Western Arctic. It approaches my *L. mastoidea* (Lynge 1937, p. 130), but the plant is only a fragment and not to be identified with certainty.

182. **Lecanora hageni** Ach.

Recorded from Ellesmere: Dean Mountain, Cape Union, Floeberg Beach, Cape Sabine (Fries 1879, p. 358); also "var. *roscida*" from Ellesmere: Westward-Ho Valley, Floeberg Beach, Discovery Bay, Mount Stephenson, Walrus Island, "Franklin-Pierce Bay", and Cape Sabine (Fries 1879, p. 358).

"*Lecanora illimata* Ach." *See* p. 338, under the genus *Pertusaria*.

"*Lecanora lacustris*" (With.) Nyl. from Akpatok Island (Smith 1934, p. 202), vide *L. poluninii* Lynge, *n. sp.*

183. **Lecanora melanophthalma** Ram.

Recorded from Akpatok Island (Smith 1934, p. 202); and "Cumberland Sound" (Tuckerman 1879, p. 167, sub nom. *Lecanora rubina* var. *opaca*); Grant Land: Westward-Ho Valley (Fries 1879, p. 358).

184. **Lecanora perradiata** Nyl.

Reported from Melville Peninsula; from Baker Lake, and from Dolphin and Union Strait (Lynge 1935, pp. 20-1); also ? Floeberg Beach in Ellesmere (Fries 1879, p. 359, sub nom. *Lecanora gibbosa* var. *squamata*. *See* above).

185. **Lecanora poluninii** Lynge, *n. sp.*

Akpatok Island in Ungava Bay, leg. Nicholas Polunin. Type specimen in the British Museum (*Lecanora lacustris* Th. Fr. *scr.* A. L. Smith—cf. 1934, p. 202).

Thallus (in specimine) parvus, c. 7 mm. latus, irregulariter limitatus, non rotundatus, albido-flavescens et leviter in fuscescentem vergens, saltem marginem versus, crassitudine mediocri et rimoso-areolatus. Areolae subangulatae, 0·3-0·6 mm. latae (si bene evolutae), non effiguratae, levissime convexae, subnitidae, laevigatae. Hypothallus non visus.

Apothecia numerosa, ab initio immersa, deinde emergentia, supra thallum elevata et subcontigua, in aetate majuscula, diam. usque ad 1 mm., et margine thallo concolori tumidulo instructa. Discus concavus, deinde subplanus, pallide carneus, epruinosus, subnitidus. Excipulum indistinctum, hypothecium omnino incoloratum, etiam cum hymenio, hymenium circiter 100µ altum, epithecium egranulosum. Paraphyses haud concretae, tenues, apicem versus non incrassatae, ramosae et transverse septatae. Sporae majusculae, 20-25 x 12-15µ.

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[1] As some of these may be considered elsewhere, I have thought it best to cite the reports of *L. gibbosa* with queries in the summary. (N.P.)

Pycnides non visae.

Hyphae corticis indistinctae, parce ramosae, non plectenchymaticae, hyphae medullares granulis angulatis dense vestitae. Gonidia viridia, diam. 8-12µ.

This species is readily distinguished from *Lecanora lacustris,* even habitually, by its thicker thallus and much larger apothecia. The individual thalli were small, but it is unnecessary to say that larger thalli may be formed of coalescent individual thalli. Microscopical study confirms the distinction. The spores are larger than in *L. lacustris,* in an example of which (Malme, Lich. Suec. No. 820) I measured spores 12-13µ in length; this is, however, evidently small for the species, for Th. Fries (1871, p. 288) gave 13-18 x 6-8µ. The paraphyses are thin and rather easily discrete in the present species; in *L. lacustris* they are conglutinated, broader towards the apices, and constrictedly septate, although thin-walled. The greatest anatomical difference is, perhaps, the structure of the cortex, which is distinctly plectenchymatous in *L. lacustris,* where the cortical hyphæ are not so, but little branched and more or less obliquely directed towards the surface.

Lecanora poluninii must, accordingly, belong to quite a different section from *L. lacustris.* Anatomically it approaches *Lecanora ceracea* Arn., from which it is distinguished by its thin, easily discrete paraphyses, and its larger spores (cf. Hue, Lich. Morph. et Anat., No. 602).

186. **Lecanora rubina** (Vill.) Ach.

Recorded from "Cumberland Sound" (Tuckerman 1879, p. 167) and Cape Searle (Dickie 1869, p. 466, sub nom. *Parmelia chrysoleuca*).

187. **Lecanora rupicola** (L.) Zahlbr.

Recorded from Akpatok Island (Smith 1934, p. 202); and from Baker Lake and Yathkyed Lake (Lynge 1935, p. 20, sub nom. *Lecanora glaucoma*).

Lecanora straminea (Wahlenb.) Ach. Labrador: East St. Modeste and L'Anse au Clair (Arnold 1896, p. 8, sub syn. *Placodium stramineum*).

Lecanora symmictera Nyl. f. *trabicola* Nyl. Labrador: L'Anse au Loup and Forteau (Arnold 1896, p. 10).

Lecanora umbrina (Ehrh.) Mass. Labrador: Forteau and East St. Modeste (Arnold 1896, p. 9).

188. **Ochrolechia frigida** (Sw.) Lynge

Burwell; Hebron; South Bay in Southampton Island; Port Harrison; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Arctic Bay; Craig Harbour.

This ubiquitous species was so well represented in the present collection that it must be quite as common in northernmost Canada as in other arctic and subarctic regions. The following reports are generally found under the heading *Ochrolechia* (or *Lecanora*) *tartarea.*

Labrador: Fox Cove (f. *microcarpa*), Battle Harbour (f. *thelephoroides* and f. *frigida*) (Hulting 1896, p. 189), Capstan Island (Arnold 1896, p. 8); Chidley Peninsula (Anon. 1907, p. 88); Akpatok Island ("*O. tartarea* and var. *frigida*", Smith 1934, p. 202); Churchill; Melville Peninsula; and King William Land (Lynge 1935, p. 22); Chesterfield (Polunin, field notes 1936); C. Baffin: *no loc.* (Dickie 1869, p. 467), "Cumberland Sound" (Tuckerman 1879, p. 167, Kekerten and Kivitung (var. *thelephoroides,* Stein 1890, p. 99); ? Melville Peninsula, f. *gonatodes* (Hooker 1825, p. 422); "Lancaster Sound"[1] (Dickie 1871, p. 34), Port Kennedy and Cape Osborne (Hooker 1861, p. 87); Gjøa Harbour (Lynge 1921, p. 6).

189. **Ochrolechia inaequatula** (Nyl.) Zahlbr.

Wakeham Bay; Pond Inlet.

Arnold's statement (1896, p. 8) of *Ochrolechia tartarea,* "ein steriler Thallus: tenuis, leprosus, auf alten Brettern" is supposed to stand for the present species, or perhaps for *Ochrolechia geminipara* (Th. Fr.) Vain.—Labrador: Forteau.

190. **Ochrolechia upsaliensis** (L.) Mass.

Lake Harbour; Pond Inlet; Dundas Harbour.

Previously recorded from Southampton Island; and the Magnetic North Pole[2] (Lynge 1935, p. 22). "*Ochrolechia* (or *Lecanora*) *pallescens*" has been recorded from Labrador: Blanc Sablon (Hulting 1896, p. 188); "Cumberland Sound" (Dickie 1869, p. 467); and Grant Land: Westward-Ho Valley (Fries 1879, p. 358). There is no indication of the substratum. At least some of these records must stand for *Ochrolechia upsaliensis.*

191. **Ochrolechia parella** (L.) Mass.

This was not found in Dr. Polunin's collection, but has been recorded from the south coast of Baffin Island, "on rocks" (Macoun 1902, p. 112, sub nom. *Lecanora tartarea*).

Icmadophila Trev. No member of this genus was found in Dr. Polunin's collection; nor is any known to occur in our area; but *I. ericetorum* (L.) Zahlbr. has been recorded from Labrador: Fox Cove and L'Anse au Clair (Hulting 1896, p. 188, sub nom. *Icmadophila aeruginosa*), and Clearwater Lake and L'Anse au Mort (Macoun 1902, p. 140, sub nom. *Baeomyces aeruginosus*).

192. **Haematomma ventosum** (L.) Mass.
var. **lapponicum** (Räs.) Lynge

Burwell; Wolstenholme, Wakeham Bay; Chesterfield; Cape Dorset, Lake Harbour; Pangnirtung; Pond Inlet.

This plant is supposedly more common here than under the same climatic conditions farther to the east. There are a number of localities, and many examples. The species has also been recorded[3] by many previous authors from various parts of the region.

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[2] *See* footnote (¹) on p. 320. (N.P., November 1946).

[3] Generally as *Lecanora ventosa* (L.) Ach. (N.P.)

Labrador: Packs Harbour (Hulting 1896, p. 189), Red Bay (Arnold 1896, p. 8), and Fort Chimo in Ungava Bay (Macoun 1902, p. 111); C. Baffin: *no loc.* "common" (Dickie 1869, p. 467), "Cumberland Sound" (Tuckerman 1879, p. 167), Kivitung (Stein 1890, p. 99); south shore of Fury and Hecla Strait (Hooker 1825, p. 422); Port Kennedy and Cape Osborne (Hooker 1861, p. 87), "Lancaster Sound"[1] (Dickie 1871, p. 34); "Smith Sound" (James 1863, p. 96); Southampton Island (Sutton ex Raup 1936, p. 5).

193. **Candelariella epixantha** (Ach.) Sandst.

Dundas Harbour, on bones and on a calcareous rock.

Previously recorded from Labrador: L'Anse au Mort and L'Anse au Loup (Arnold 1896, p. 7); Baker Lake (Lynge 1935, p. 22); S. Baffin: north shore of Hudson Strait (Macoun 1902, p. 104, sub nom. *Placodium vitellinum* var. *octosporum*); Ellesmere: Floeberg Beach, Egerton Valley, and Cape Sabine (Fries 1879, p. 357, sub syn. *Caloplaca subsimilis*).

194. **Candelariella placodizans** (Nyl.) Magn.

Burwell; Lake Harbour; Arctic Bay; Craig Harbour.

Previously recorded from Melville Peninsula: Georgina Bay and Danish Island (Lynge 1935, p. 23, with description).

195. **Candelariella vitellina** (Ehrh.) Müll. Arg.

Curiously enough this arctic ubiquist was not found in Dr. Polunin's present collection, but it has been recorded from the region by a number of authors.

Labrador: "an mehreren Orten" (Arnold 1896, p. 7); Akpatok Island (Smith 1934, p. 202); "Cumberland Sound" (Tuckerman 1879, p. 167); S. Baffin: North Bluff[2] (Macoun 1902, p. 104, sub syn. *Placodium vitellinum*); Melville Peninsula; also Baker Lake and Churchill (Lynge 1935, p. 22); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub syn. *Lecanora vitellina*); King William Land: Gjøa Harbour (Lynge 1921, p. 5); Port Kennedy (Hooker 1861, p. 87, sub syn. *Lecanora vitellina*), Assistance Bay (Babington 1852, p. 276); Ellesmere: Westward-Ho Valley and Cape Sabine (Fries 1879, p. 357, sub syn. *Caloplaca vitellina*).

196. **Candelariella crenulata** (Wahlenb.) Zahlbr.

"Placodium crenulatum Wallr." has been reported from Cape Baird, lat. 81° 32′ N. in Ellesmere (Lehnert and Greely 1888, p. 18), but whether the plant was correctly determined is uncertain.

"Parmelia murorum Fries var. δ" has been reported from Cape Adair (Dickie 1869, p. 466). According to Fries (Lich. Eur. 1831, p. 115) "var. δ" is the present species, but we cannot be sure from this that Dickie's plant is the same; perhaps it is only *Caloplaca elegans*?

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[2] On Big Island. (N.P.)

PARMELIACEAE

197. **Parmeliopsis ambigua** (Wulf.) Nyl.

Parmeliopsis diffusa (Web.) Poetsch., *vide* Hillmann, Rabenh. Kryptogamen-Fl., IX, 5, 3, p. 27 (1936), *ubi syn.*

Pond Inlet, 2470a-18.

Previously recorded from Kazan River (Lynge 1935, p. 24), and from the Greenland side of Davis Strait (Dickie 1869, p. 466).

Parmeliopsis hyperopta (Ach.) Vain. This has been recorded from Labrador: Fox Cove (Hülting 1896, p. 191), and Capstan Island (Arnold 1896, p. 5).

198. **Parmelia physodes** (L.) Ach.

Churchill; South Bay in Southampton Island; Wolstenholme; Pond Inlet.

Previously recorded from Labrador: Clearwater Lake (var. *vulgaris*), and L'Anse au Mort (var. *obscurata*) (Macoun 1902, pp. 69-70), Anse Sablon (Anon. 1907, p. 87); "Cumberland Sound" (Tuckerman 1879, p. 167); Grant Land: winter quarters of H.M.S. *Discovery*[1] (Fries 1879, p. 353).

199. **Parmelia subobscura** Vain., Arkiv för Botanik, VIII, 4, p. 33 (1909).

South Bay in Southampton Island; Craig Harbour.[2]

This species was rather scarce in the present collection. It has previously been recorded from Melville Peninsula: Repulse Bay and Danish Island; and Yathkyed Lake, which lies to the west of Hudson Bay (Lynge 1935, p. 24). Most probably *"Parmelia physodes* f. *obscurata"* from Grant Land: winter quarters of H.M.S. *Alert*[3], also stands for this species (Fries 1879, p. 353).

200. **Parmelia austerodes** Nyl.

South Bay in Southampton Island, very scarce.

201. **Parmelia intestiniformis** (Vill.) Ach.

Pond Inlet (coll. Frère Bazin), very scarce.

There are also reports of *"Parmelia encausta* (Sm.) Nyl." from the region, and undoubtedly some of them stand for the genuine *Parmelia intestiniformis.*

Labrador: L'Anse au Loup and L'Anse au Clair (Arnold 1896, p. 6); "Cumberland Sound" (Tuckerman 1879, p. 167); Grant Land: Westward-Ho Valley (Fries 1879, p. 353, sub nom. *Parmelia encausta* β *intestiniformis*).

202. **Parmelia infumata** Nyl.

South Bay in Southampton Island, very scarce.

This species is generally common on the tops of stones and prominent rocks where birds like to rest, and where it grows together with other ornithocoprophilous species, such as *Xanthoria candelaria* and *Physcia dubia*. We should have expected more of it from this region also, but perhaps it has been extensively overlooked.

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[1] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

[2] In the Farlow Herbarium is a specimen (Polunin No. 2501a-18) from Dundas Harbour, determined by Prof. Lynge, but not cited by him—hence mentioned merely with a query in the summary (*See* below). (N.P)

[3] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

In his report of *"Parmelia olivacea"* from Grant Land: Floeberg Beach, Westward-Ho Valley, and Mount Stephenson, Fries (1879, p. 353) gave the habitat as "On mosses and stones . . . thallus more or less sprinkled with very minute verrucae". This suggests *Parmelia infumata,* almost with certainty.

203. **Parmelia alpicola** Th. Fr.

Burwell; Chesterfield; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Clyde.

This species cannot be rare. Previously recorded from Labrador: L'Anse au Clair (Hulting 1896, p. 191); Baker Lake; and Danish Island off Melville Peninsula (Lynge 1935, p. 25); "Cumberland Sound" (Tuckerman 1879, p. 167).

204. **Parmelia granulosa** Lynge[1]

Dundas Harbour, very scarce.

205. **Parmelia pubescens** (L.) Vain.

Wakeham Bay; Pangnirtung, Clyde; Dundas Harbour.

There were not many finds of this species in Dr. Polunin's collection. Yet we cannot suppose it to be rare, as there are numerous previous reports (incl. sub syn. *Cornicularia pubescens* and *Parmelia lanata* (L.) Wallr.) Some of these may, however, stand for *Parmelia minuscula* (q.v.).

Labrador: Bolster Rocks (Arnold 1896, p. 6); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); Melville Island (Brown 1824, p. cccvi); Melville Peninsula: Igloolik (Hooker 1825, p. 426); N. Baffin; also Melville Peninsula; and Baker Lake (Lynge 1935, p. 25); ? Ellesmere: Alexandra Haven (Fries 1879, p. 353).

206. **Parmelia minuscula** Nyl.

Dundas Harbour, scarce.

The f. *luxurians* of this species has previously been recorded from Melville Peninsula: Danish Island (Lynge 1935, p. 25).

207. **Parmelia centrifuga** (L.) Ach.

Chesterfield; Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung.

Previously recorded from Labrador: Blanc Sablon (Arnold 1896, p. 6), and Clearwater Lake (Macoun 1902, p. 73); also N. Quebec: Digges Island (Macoun 1902, p. 73); S. Baffin: Upper Savage Islands (Lamb *in litt.* 1938); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167).

Parmelia centrifuga is probably common all over the region. In Lynge and Scholander's "Lichens from North East Greenland" I recently described a new species *Parmelia groenlandica,* distinguished by its yellowish colour and its soft upper cortex. Having now seen more material of it, I find it difficult to maintain it as a proper species, and propose to reduce it to a variety of *Parmelia centrifuga,* viz.:

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[1] *Parmelia granulosa* is now called *Parmelia disjuncta* Erichs. (cf. Lynge, "Lichens from Iceland...."; Norske Vidensk.-Akad. Skr. I. Math.-Naturv. Kl. 1940, No. 7, Oslo). (E. Dahl, October 1946.)

var. *groenlandica* (Lynge) Lynge, *n. comb.*

Parmelia groenlandica Lynge, in Lynge & Scholander, Skr. om Svalbard og Ishavet No. 41, p. 73, Pl. V, fig. 1 (1932).

This has been recorded from Yathkyed Lake, which lies outside our area to the west of Hudson Bay (Lynge 1935, p. 27).

208. **Parmelia incurva** (Pers.) Th. Fr.

Clyde, scarce.

Previously recorded from Kerkerten Island in Cumberland Sound (Dickie 1869, p. 466); and from Port Kennedy (Hooker 1861, p. 87). In the Arctic it is not always easy to distinguish from *Parmelia centrifuga.*

209. **Parmelia separata** Th. Fr.

South Bay in Southampton Island; Pangnirtung; Pond Inlet (at the last locality collected by Frère Bazin).

Recorded from Grant Land: Westward-Ho Valley, from which locality it was described as a new species (Fries 1879, p. 353); N. Baffin; also Melville Peninsula; and Baker Lake (Lynge 1935, p. 25).

210. **Parmelia saxatilis** (L.) Ach.

Burwell; South Bay in Southampton Island; Chesterfield; Cape Dorset; Pangnirtung; Pond Inlet.

This common species has been recorded from many localities. Labrador: Capstan Island, L'Anse au Clair, and Blanc Sablon (Arnold 1896, p. 6), Battle Harbour (Cummings 1902, p. 198), Blanc Sablon (var. *furfurascens*), L'Anse au Clair and Battle Harbour (var. *panniformis*) (Macoun 1902, p. 69), Anse Sablon (Anon. 1907, p. 87); Akpatok Island, f. *furfuracea* (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); C. Baffin: *no loc.* ? (Dickie 1869, p. 466), Cumberland Sound, incl. var. *panniformis* (Tuckerman 1879, p. 167); Melville Peninsula: Igloolik (Hooker 1825, p. 422), Melville Peninsula; also Chesterfield Inlet; and Kazan River and Churchill (Lynge 1935, p. 28); Port Kennedy (Hooker 1861, p. 87); "Smith Sound" (James 1863, p. 96), Brevoort Island off Ellesmere Island (Fries 1879, p. 353).

211. **Parmelia sulcata** Tayl.

Churchill; Lake Harbour; Pangnirtung; Pond Inlet (at the last locality collected by Frère Bazin).

This species is most probably common, at least in places where there are many birds. We are, therefore, astonished to find only two previous records from the region, viz., Labrador: Red Bay (Arnold 1896, p. 6); and Akpatok Island (Smith 1934, p. 202). It is, however, conceivable that some of the reports for *Parmelia saxatilis* may stand for the present species.

212. **Parmelia omphalodes** (L.) Ach.

South Bay in Southampton Island; Clyde; Pond Inlet (coll. Frère Bazin); Craig Harbour.

Previously recorded from Labrador: Battle Harbour[1]; C. Baffin: *no loc.* (Dickie 1869, p. 466, sub nom. *P. saxatilis* var. *omphalodes*), "Cumberland Sound" (Tuckerman 1879, p. 167); Akpatok Island (Smith 1934, p. 202); "Lancaster Sound"[2] (Dickie 1871, p. 34); Melville Peninsula: Winter Island (Hooker 1825, p. 422); Ellesmere: Alexandra Haven (Fries 1879, p. 353).

Several other species of *Parmelia,* not found in Dr. Polunin's collections, have been reported from the Canadian Eastern Arctic or adjacent areas, viz., *"Parmelia Borreri* Turn. Smith Sound" (James 1863, p. 96). It is, however, most improbable that this southern species should be found so far to the north.

"Parmelia caperata (L.) Ach." Here again it seems improbable that such a southern species should have been found so far to the north as Cumberland Sound, whence it was reported by Dickie (1869, p. 466).

213. **Parmelia conspersa** (Ehrh.) Ach.

Reported from Labrador: Blanc Sablon (Arnold 1896, p. 6); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); Melville Peninsula: south shore of Fury and Hecla Strait (Hooker 1825, p. 423—but Hooker gives *Lichen centrifugus* as a synonym for this species); "Smith Sound" (James 1863, p. 96, by the author wisely supplied with a "?"); Port Kennedy (Hooker 1861, p. 87). It is doubtful whether *Parmelia conspersa* is found so far to the north, and it is possible that these records stand for *P. centrifuga.*

Parmelia enteromorpha Ach. Labrador: Blanc Sablon (Macoun 1902, p. 70).

"Parmelia olivacea Ach." Hudson Bay: York Factory (Leighton 1867, p. 194). The substratum is not mentioned, so the species can only be reported as belonging to the *Parmelia olivacea* section.

214. **Parmelia prolixa** (Ach.) Röhl.

Recorded from Baker Lake and Yathkyed Lake (Lynge 1935, p. 27); and from Ellesmere: Alexandra Haven (Fries 1879, p. 353, sub syn. *Parmelia olivacea* var. β *prolixa*).

215. **Parmelia stygia** (L.) Ach.

From Labrador: Venison Tickle (Hulting 1896, p. 191), and Hopedale (Anon. 1907, p. 87); C. Baffin: "frequent" (Dickie 1869, p. 466), "Cumberland Sound" (Tuckerman 1879, p. 167); Melville Peninsula: Igloolik (Hooker 1825, p. 423); Port Kennedy (Hooker 1861, p. 87); "Smith Sound" (James 1863, p. 96). We cannot feel quite sure that all of these records are trustworthy, but still the species is supposed to be fairly common in the region.

216. **Cetraria islandica** (L.) Ach.

Port Harrison; Wolstenholme, Wakeham Bay; South Bay in Southampton Island; Cape Dorset, Lake Harbour; Arctic Bay; Dundas Harbour; Craig Harbour.

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[1] Prof. Lynge gave no source for this report; nor have I been able to find any. (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

It is difficult to distinguish between the present species and *Cetraria crispa* without the aid of paraphenylendiamin, with which *C. islandica* stains intensely cinnabarine whereas *C. crispa* does not stain. In the above enumeration I only include the plants that were tested and found to be P+. The material was larger, but a great part of it was returned before I became aware of this difference; then it was no longer available to me. Nevertheless it seems safe to assume that *Cetraria islandica* is to be found all over the Canadian Eastern Arctic and Labrador, and that it is one of the commonest lichens there. This impression is strengthened if we also consider the literary records. They are so numerous that we can afford to "loose" some of them which may possibly stand for related species. I have tested our Canadian material in Herb. Oslo with P; this and the literary records result in the following localities for *C. islandica:*

Labrador: *no loc.* (Schlechtendahl 1835-6, and Arnold 1896, p. 5), Okak (Meyer 1830, p. 3), Battle Harbour and L'Anse au Loup (Cummings 1902, p. 197), Anse Sablon, Nain, and Hopedale (Anon. 1907, p. 87); Akpatok Island, "*C. islandica* Ach. and var. *tenuifolia* Wain. (var. *crispa* Ach.)" (Smith 1934, p. 202—all these plants stain red with paraphenylendiamin), Southampton Island (Sutton ex Raup 1936, p. 6); S. Baffin: North Bluff (Macoun 1902, p. 53); C. Baffin: "abundant everywhere" (Dickie 1869, p. 466), "Cumberland Sound" (Tuckerman 1879, p. 167), Kivitung (Stein 1890, p. 99); N. Baffin: Mitimatalik (Fifth Thule Expedition, specimen seen in Herb. Oslo), [?] "Sinus Baffini" (Meyer 1830, p. 3); "Lancaster Sound"[1] (Dickie 1871, p. 34); Ellesmere: Floeberg Beach (Fries 1879, p. 352), Goose Fiord and Harbour Fiord (Second Norwegian Arctic Expedition in the *Fram,* specimens seen in Herb. Oslo); Churchill, Kazan River, and Orpigtujoq Island (Fifth Thule Expedition, specimens seen in Herb. Oslo); Melville Peninsula: Igloolik (Hooker 1825, p. 423); Melville Island (Brown 1824, p. cccvi, cf. Meyer 1830, p. 3).

217. **Cetraria crispa** (Ach.) Nyl.

C. islandica (L.) Ach. var. *tenuifolia* (Retz.) Wain.

Wolstenholme; Pangnirtung, Clyde; Pond Inlet; Dundas Harbour; Craig Harbour.

The test with paraphenylendiamin considerably reduced the number of what had previously been thought to be *Cetraria crispa* plants; nevertheless the species appears to be distributed all over the region as a fairly common plant, even if previous literature reports are of little interest unless the specimens can be tested with P.

218. **Cetraria delisei** (Bory) Th. Fr.

C. hiascens (Fr.) Th. Fr.

South Bay in Southampton Island; Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (coll. Frère Bazin); Dundas Harbour; Craig Harbour.

Several of these plants were broad-leaved, quite resembling *Cetraria islandica.* But all doubtful plants were tested with J, and with P (J—, P—). The material is sufficient to show us that the species is common and widespread in our area.

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

Labrador: "pluribi" (Arnold 1896, p. 5), Blanc Sablon and L'Anse au Mort (Hulting 1896, p. 187), and West St. Modeste (Cummings 1902, p. 197); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); C. Baffin: Cumberland Sound (Tuckerman 1879, p. 167); N. Baffin: Mitimatalik (Lynge 1935, p. 28); S. Baffin; also Nottingham Island; and Digges Island (Macoun 1902, p. 54); Melville Peninsula: Repulse Bay (Lamb *in litt.* 1938); Ellesmere: Cape Sabine (Fries 1879, p. 352).

219. **Cetraria nivalis** (L.) Ach.

Burwell; Hebron; Churchill; South Bay in Southampton Island, Mansel (Mansfield) Island (at the latter locality coll. Douglas Leechman); Port Harrison; Wolstenholme, Wakeham Bay, Diana Bay (coll. Ney and Courtright); Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Arctic Bay, Pond Inlet (coll. Frère Bazin); Dundas Harbour; Craig Harbour.

This great number of plants proves the species to be one of the commonest and most widespread lichens in the whole region, as was to be expected.

Previously recorded from numerous localities all over the region. Labrador: Okak (Meyer 1830, p. 2, and Schlechtendahl 1835-6, p. 77), Forteau (Hulting 1896, p. 187), Mount Faunce and Battle Harbour (Cummings 1902, p. 197), Nain and L'Anse au Loup (Macoun 1902, pp. 54-5); Chidley Peninsula; Anse Sablon, Nain, and Hopedale (Anon. 1907, p. 87); Burwell or near (Hantzsch 1909, p. 220); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167), Kivitung and Kekerten (Stein 1890, p. 99), Kingua Fiord (Stein 1890, p. 96, [?] "Sinus Baffini" (Meyer 1830, p. 2); Ellesmere: Floeberg Beach, Cape Union, Discovery Bay, Alexandra Haven (Fries 1879, p. 352), "Smith Sound" (James 1863, p. 96); Melville Island (Brown 1824, p. cccvi); Mansfield Island; and S. Baffin (Macoun 1902, pp. 54-5); Melville Peninsula: Fury and Hecla Strait (Lamb *in litt.* 1938), Igloolik, and Winter Island; also Upper Savage Islands (Hooker 1825, p. 423); N. Baffin; also Melville Peninsula; Southampton Island; several stations on the west coast of Hudson Bay, King William Land, and Dolphin and Union Strait (Lynge 1935, p. 30); Chesterfield (Polunin 1936 MS.); Port Kennedy (Hooker 1861, p. 87, sub syn. *Platysma nivale*), "Lancaster Sound"[1] (Dickie 1871, p. 34); King William Land: Gjøa Harbour (Lynge 1921, p. 5).

220. **Cetraria cucullata** (Bell.) Ach.

Burwell; South Bay in Southampton Island; Chesterfield; Port Harrison; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet, Arctic Bay; Dundas Harbour; Craig Harbour.

The great number of localities for this species indicates that it is certainly a very common one all over the region.

Labrador: West St. Modeste (Hulting 1896, p. 187), Mount Faunce 3,500-4,000 ft., and Nachvak, "one of the most common species" (Cummings 1902, p. 197), L'Anse au Mort (Macoun 1902, p. 54); Akpatok Island

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

(Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); Marble Island; and Digges Island (Macoun 1902, p. 54); C. Baffin: "very abundant" (Dickie 1869, p. 466, sub syn. *Platysma cucullatum*), "Cumberland Sound" (Tuckerman 1879, p. 167), Kingua Fiord (Stein 1890, p. 96), Kivitung and Kekerten (Stein 1890, p. 99); Ellesmere: *no loc.* (Lehnert and Greely 1886, p. 397, and 1888, p. 18), "Smith Sound" (James 1863, p. 96); Melville Peninsula: Igloolik (Hooker 1825, p. 423); Melville Island (Brown 1824, p. cccvi); N. Baffin; and Melville Peninsula; and west side of Hudson Bay; also King William Land, Dolphin and Union Strait, altogether in many localities (Lynge 1935, pp. 30-1).

221. **Cetraria tilesii** Ach.

South Bay in Southampton Island; Pond Inlet (here also coll. Frère Bazin).

This species cannot really be rare, for it has previously been recorded from several localities in and around the Canadian Eastern Arctic, viz., N. Baffin: Port Bowen; and Whale Islands on the Greenland side of Davis Strait (Hooker 1826, pp. 130-1, sub nom. *Cetraria juniperina*); Melville Peninsula: Igloolik (Hooker 1825, p. 423, sub nom. *Cetraria juniperina*); Melville Island (Brown 1824, p. cccvi); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub nom. *Platysma juniperinum*), Port Kennedy (Hooker 1861, p. 87, sub nom. *Platysma juniperinum*); the Magnetic North Pole,[2] King William Land, Dolphin and Union Strait (Lynge 1935, p. 31), Gjøa Harbour (Lynge 1921, p. 5); ? Southampton Island (Sutton ex Raup 1936, p. 6, sub nom. *Cetraria juniperina*).

222. **Cetraria nigricans** (Retz.) Nyl.

Cape Dorset; Clyde.

This species is evidently uncommon; it has previously been recorded in our area only from Melville Peninsula: Gore Bay (Lynge 1935, p. 31).

223. **Cetraria hepatizon** (Ach.) Vain.

Pangnirtung.

We cannot conclude from this single find that the species is rare in the region; on the contrary it is supposed to be rather common.

Previously recorded from Kazan River (Lynge 1935, p. 31). It seems probable that previous records of *Cetraria* (or *Platysma*) *fahlunensis* chiefly stand for the present species, at least from the northern localities. However, some of them may represent *Cetraria commixta* (Nyl.) Th. Fr., even if this question can only be cleared up by a study of the plants, none of which has been accessible to me. These records are Labrador: *no loc.* (Schlechtendahl 1835-6, p. 77), Okak (Meyer 1830, p. 2), West St. Modeste (Hulting 1896, p. 187), Okak, East St. Modeste, and Blanc Sablon (Arnold 1896, p. 5), Battle Harbour (Cummings 1902, p. 197), and Clearwater Lake (Macoun 1902, p. 55); Akpatok Island (Smith 1934, p. 202), ? Southampton Island (Sutton ex Raup 1936, p. 6); C. Baffin: "Davis Strait, west side, frequent" (Dickie 1869, p. 466).

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[1] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[2] *See* footnote (1) on p. 320. (N.P., November 1946.)

224. **Cetraria glauca** (L.) Ach.

Wakeham Bay; Cape Dorset.

This rather southern species has previously been recorded from Labrador: *no loc.*, var. *fusca* (Cummings 1902, p. 198), L'Anse au Mort (Arnold 1896, p. 5).

In the literature we find reports from our area of some Cetrariae not found in the Polunin collections, viz.:

Cetraria chlorophylla (Willd.) Vain. Labrador: L'Anse au Clair Bay (Macoun 1902, p. 56).

225. **Cetraria chrysantha** Tuck.

Recorded from Melville Peninsula: Georgina Island and Wager Inlet (Lynge 1935, p. 28); Grinnell Land (Lehnert and Greely 1886, p. 397, and 1888, p. 18).

Cetraria lacunosa Ach. Labrador: L'Anse au Mort and L'Anse au Clair (Arnold 1896, p. 5).

Cetraria odontella Ach. Labrador: Clearwater Lake (Macoun 1902, p. 52).

Cetraria pinastri (Scop.) S. Gray. Labrador: Forteau and Capstan Island (Arnold 1896, p. 5); Hudson Bay: York Factory (Leighton 1865, p. 193).

226. **Cetraria richardsonii** Hook.

Recorded from near Chesterfield Inlet (Macoun 1902, p. 54), and Kazan River (Lynge 1935, p. 32).

Cetraria saepincola (Ehrh.) Ach. Labrador: Clearwater Lake (Macoun 1902, p. 56); York Factory (Leighton 1865, p. 193), Kazan River (Lynge 1935, p. 28).

Nephromopsis Müll. Arg. No member of this genus is known from the Canadian Eastern Arctic but *Nephromopsis ciliaris* (Ach.) Hue has been recorded from Labrador: Pinware River and Turners Head in Grandfathers Bay (Arnold 1896, p. 5). It was not found in Dr. Polunin's collection.

USNEACEAE

227. **Dactylina arctica** (Hook.) Nyl. *See* Lynge, Skr. om Svalb. og Ishavet, No. 59, p. 13, Pl. I, fig. 1, text-fig. 6 (Oslo 1933).

Burwell; Chesterfield; Baker Lake (coll. Père Dutilly); South Bay in Southampton Island; Port Harrison; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (coll. Frère Bazin); Dundas Harbour; Craig Harbour.

Dr. Polunin found this species in almost every place where he collected lichens. The fact that it was also collected by his apostolic associates further emphasizes its frequency.

Dactylina arctica has been recorded from Labrador: Mount Faunce 3,500-4,000 ft., and Nachvak (Cummings 1902, p. 197), Clearwater Lake and Whale River (Macoun 1902, p. 53); Burwell or near (Hantzsch 1909, p. 220); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); Cape Prince of Wales, Digges Island; and Upper Savage Islands (Macoun 1902, p. 53); C. Baffin: Cape Searle (Dickie 1869, p. 466), Kivitung and Kekerten (Stein 1890, p. 99), "Cumberland Sound" (Tuckerman 1879, p. 167), Kingua Fiord (Stein 1890, p. 96); Melville Peninsula: Duckett Cove, Barrow River, and Igloolik (Hooker 1825, p. 424, sub syn. *Dufourea arctica*); N. Baffin: "Ponds Bay" (Hooker 1861, p. 87, sub syn. *Dufourea arctica*); Georgina Island, and Kazan River (Lynge 1935, p. 33); "Lancaster Sound"[1] (Dickie 1871, p. 34); "Smith Sound" (James 1863, p. 96). For additional localities from Arctic Canada, etc., *See* Lynge (1933, pp. 24-5).

228. **Dactylina ramulosa** (Hook.) Tuck.

South Bay in Southampton Island; Port Harrison; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (here also coll. Frère Bazin), Arctic Bay; Dundas Harbour; Craig Harbour.

The number of localities is sufficient to show that this species is almost as common and widespread as the last; but it is, perhaps, more northern in range. Previously recorded from N. Quebec: Digges Island (Macoun 1902, p. 52, sub syn. *Cetraria ramulosa*); C. Baffin: "Cumberland Sound" (Lynge 1933, p. 47); Melville Peninsula: Igloolik (Hooker 1825, p. 424, sub syn. *Dufourea ramulosa*), and Georgina Island (Lynge 1935, p. 33); King William Land: Gjøa Harbour (Lynge 1921, p. 51), and Pfeffer River (Lynge 1935, p. 33); Devon Island; King Oscar Land (pluribi) and elsewhere in Ellesmere (pluribi) (Lynge 1933, p. 47).

Dactylina madreporiformis (Ach.) Tuck. There are some reports of this species from the region, but they are supposed to stand for *Dactylina ramulosa* (syn. *D. muricata*). C. Baffin: "Davis Strait, frequent on both sides" (Dickie 1869, p. 466, sub syn. *Dufourea madreporiformis* Ach.); "Lancaster Sound"[1] (Dickie 1871, p. 34, sub syn. *Dufourea madreporiformis*), and Port Kennedy (Hooker 1861, p. 87)—cf. my paper of 1933, p. 40.

229. **Cornicularia[2] divergens** Ach.

Churchill; South Bay in Southampton Island; Cape Dorset, Lake Harbour; Pangnirtung; Dundas Harbour; Craig Harbour.

Previously recorded from Labrador: Blanc Sablon (Hulting 1896, p. 187), Long Island (Arnold 1896, p. 4), Mount Faunce, Long Island, and Battle Harbour (Cummings 1902, p. 198), Clearwater Lake; and Digges Island (Macoun 1902, p. 62, sub syn. *Bryopogon divergens*); C. Baffin: Kingua Fiord (Stein 1890, p. 96), Kivitung (Stein 1890, p. 98), Davis Strait "frequent" (Dickie 1869, p. 466, sub syn. *Alectoria divergens*); Marble Island (Macoun 1902, p. 62); "In Mr. Edwards's collection" (Hooker 1825, p. 426); N. Baffin; and Melville Peninsula; and west side of Hudson Bay; and Churchill, altogether in many localities (Lynge 1935, p. 32).[3]

This species is evidently quite common and widespread all over the region. Habitually it much resembles *Alectoria nitidula* (Th. Fr.) Vain., from which it is distinguished by its chemical reaction with $CaCl_2O_2$; it is "C+", whereas *nitidula* is "C—".

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[1] Collected on Philpots Island. lat. 74° 44′ N. (N.P.)

[2] This genus is "usually regarded as a section of *Cetraria* (Parmeliaceae)"—Lamb *in litt*. 1946.

[3] The Akpatok Island report (Smith 1934, p. 202, sub syn. *Alectoria divergens*) refers instead to *Alectoria nigricans* (q.v.) (N.P.)

230. **Cornicularia aculeata** (Schreb.) Ach.

Baker Lake (coll. Père Dutilly); Cape Dorset, Lake Harbour; Craig Harbour.

Previously recorded from Labrador: Packs Harbour, f. *alpina* (Arnold 1896, p. 5); Chidley Peninsula; and Hopedale (Anon. 1907, p. 87), Clearwater Lake (Macoun 1902, p. 52, sub syn. *Cetraria aculeata*); Melville Peninsula: Igloolik (Hooker 1825, p. 426), Melville Peninsula; and Kazan River and King William Land (Lynge 1935, p. 33).

231. **Cornicularia normorica** (Gunn.) DR.

Cetraria tristis (Web.) Fr.

This has been reported from Digges Island in Hudson Strait (Macoun 1902, p. 51). It would be a very interesting find if the determination, which is in need of checking, is indeed correct.

Evernia mesomorpha Nyl.

Syn. *Evernia* (or *Letharia*) *thamnodes* (Flot.) Arnold

Churchill, very scarce.

Not yet found in the Canadian Eastern Arctic proper, i.e., north of the 60th parallel.

Evernia arctica (Elenk. & Sav.) Lynge. Recorded from far to the west in Dolphin and Union Strait (Lynge 1935, p. 33).

Evernia prunastri (L.) Ach. Hudson Bay: York Factory (Leighton 1867, p. 192).

232. **Alectoria chalybeiformis** (L.) Röhl.

Alectoria jubata (L.) Ach. var. *chalybeiformis* (L.) Ach.

South Bay in Southampton Island.

The specific epithet *chalybeiformis* (1753) is older than *jubata* (1803).

This species is supposedly more common in the region than this single find might suggest. It has previously been recorded from Labrador: Red Bay, Independent, and Blanc Sablon (Macoun 1902, p. 63, sub nom. *Bryopogon jubata* var. *prolixa*), and Clearwater Lake (Macoun 1902, p. 63, sub syn. *Bryopogon jubata* var. *chalybeiformis*); Chidley Peninsula; and Anse Sablon (Anon. 1907, p. 87); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); S. Baffin: *no loc.* (Macoun 1902, p. 63, sub syn. *Bryopogon jubata* var. *chalybeiformis*); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167, sub nom. *Alectoria jubata* and var. *chalybeiformis*); King William Land: Gjøa Harbour (Lynge 1921, p. 3), and Pfeffer River (Lynge 1935, p. 35).

233. **Alectoria nitidula** (Th. Fr.) Vain.[1]

Cape Dorset; Pangnirtung; Pond Inlet.

This is evidently an addition to the lichen flora of America, but it was not altogether unexpected—cf. Lynge (1937, pp. 165-6).

234. **Alectoria nigricans** (Ach.) Nyl.

South Bay in Southampton Island; Wolstenholme; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Dundas Harbour; Craig Harbour.

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[1] This species should be called *Alectoria lanea* (Ehrh.) Vain., because *lanea* is an older epithet than *nitidula*. (E. Dahl, October 1946.)

This must be even more plentiful all over the region than the available records show, for undoubtedly the greater part of the reports of *Alectoria bicolor* stand instead for the present species. The records in the literature of *Alectoria nigricans* from within or near our area are:

Labrador: L'Anse au Clair, and Blanc Sablon "mit Fruchten" (Hulting 1896, p. 187), Blanc Sablon and Capstan Island (Arnold 1896, p. 4), "Labrador, fertile", Clearwater Lake, L'Anse au Loup, and Fords Harbour (Macoun 1902, p. 65), Mount Faunce, 3,500-4,000 ft. (Cummings 1902, p. 198); Akpatok Island (Smith 1934, p. 202, sub nom. *Alectoria divergens*, plant seen), Mansfield Island; and Marble Island (Macoun 1902, p. 65); C. Baffin: "Ad sinum Baffini" (Meyer 1830, p. 9), Kekerten (Stein 1890, p. 98), "Cumberland Sound" (Tuckerman 1879, p. 167); Bylot Island; and Melville Peninsula; and Southampton Island; and several localities on the west side of Hudson Bay; also King William Land, and Dolphin and Union Strait (Lynge 1935, p. 35); Igloolik, and south side of Fury and Hecla Strait; also Upper Savage Islands (Hooker 1825, p. 426, sub syn. *Cornicularia ochroleuca* β *nigricans*); King William Land: Gjøa Harbour (Lynge 1921, p. 3); Ellesmere: winter quarters of H.M.S. *Discovery*[1], Westward-Ho Valley, and Alexandra Haven (Fries 1879, p. 351).

235. **Alectoria ochroleuca** (Ehrh.) Nyl.

Burwell; Hebron; Port Harrison; Wolstenholme, Wakeham Bay; South Bay in Southampton Island; Baker Lake (coll. Père Dutilly), Churchill; Cape Dorset, Lake Harbour; Pangnirtung, Clyde; Pond Inlet (incl. coll. Frère Bazin), Arctic Bay; Dundas Harbour; Craig Harbour.

Dr. Polunin's many plants, as well as the literary records, show us that this species is plentiful all over the Canadian Eastern Arctic and (perhaps) also in Labrador. The greater part of the material was of the robust type, and "P —", but f. *septentrionalis* Lynge was also collected, e.g., at Dundas Harbour and Craig Harbour.

Labrador: Blanc Sablon (Hulting 1896, p. 187), Fords Harbour, L'Anse au Mort, Clearwater Lake; and Cape Chudleigh (Macoun 1902, p. 64); Nain and Hopedale (Anon. 1907, p. 87); Akpatok Island (Smith 1934, p. 202), Nottingham Island (Macoun 1902, p. 64), Southampton Island (Sutton ex Raup 1936, p. 5); S. Baffin: *no loc.* (Macoun 1902, p. 64), Upper Savage Island (Lamb *in litt.* 1938); C. Baffin: *no loc.* (Dickie 1869, p. 466), "Cumberland Sound" (Tuckerman 1879, p. 167), Kingua Fiord (Stein 1890, p. 96); Bylot Island, N. Baffin; and Melville Peninsula; and Southampton Island; and west coast of Hudson Bay; also King William Land (Lynge 1935, p. 35); Melville Peninsula: south shore of Fury and Hecla Strait (Hooker 1825, p. 426, sub syn. *Cornicularia ochroleuca*); Melville Island (Brown 1824, p. cccvi); Port Kennedy and Cape Osborne (Hooker 1861, p. 87), "Lancaster Sound"[2] (Dickie 1871, p. 34); Ellesmere: winter quarters of H.M.S. *Alert*[3], Payer Harbour, Cape Sabine, Alexandra Haven (Fries 1879, p. 351), "Smith Sound" (James 1863, p. 96).

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[1] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[3] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

236. **Alectoria cincinnata** (Fr.) Lynge[1]

Port Harrison.

"Alectoria ochroleuca var. *cincinnata* (Fr.)" has been reported from Burwell or near (Hantzsch 1909, p. 220, *fide* Zahlbruckner).

var. **vexillifera** Nyl.

Burwell; Port Harrison; Chesterfield.

Alectoria cincinnata has been recorded from Independent; also Digges Island and North Bay in Hudson Bay (Macoun 1902, p. 65, sub nom. *Alectoria sarmentosa* var. *cincinnata*); from C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167), Kivitung (Stein 1890, p. 98). Some reports of *Alectoria sarmentosa* may also stand for the present species.

Some other Alectoriae that were not found in the Polunin collections have been reported from the Canadian Eastern Arctic (probably all erroneously) or from Labrador, viz.:

Alectoria bicolor (Ehrh.) Nyl. from Labrador: *no loc.* (Schlechtendahl 1835-6, p. 76), Okak (Meyer 1830, p. 9), Okak and L'Anse au Loup (Arnold 1896, p. 4), and Emily Harbour (Macoun 1902, p. 62); C. Baffin: "very frequent" (Dickie 1869, p. 466); "In Mr. Edwards's collection" (Hooker 1825, p. 426, sub syn. *Cornicularia bicolor*); Grinnell Land (James 1863, p. 96). There is no reason to doubt the southern records, such as those of Arnold, but the northern reports are very improbable; they presumably stand for *Alectoria nigricans,* which is also "bicolorous".

Alectoria implexa (Hoffm.) Nyl. Labrador: Blanc Sablon (Macoun 1902, p. 63, sub syn. *Bryopogon jubata* var. *implexa*).

Alectoria sarmentosa Ach. Labrador: Cape Forteau, Leading Tickle, and Blanc Sablon (Macoun 1902, p. 64).

Alectoria sulcata Nyl. This species has been reported from "Smith Sound" (James 1863, p. 96). It is most improbable that it was ever found there, as it is otherwise known only from "Himalaya, Nepal et Junnan" (Zahlbruckner, Cat. Lich. VI, p. 397).

Ramalina pollinariella Nyl.

Churchill, on branches, very scarce in the present collection.

The compressed thallus is fistulose and much-branched, with sorediated apices. It is, unfortunately, sterile. The plant agrees well with Räsänen, Lich. Fenn. No. 28.

According to R. H. Howe, "North American Species of the Genus Ramalina, Part VI", in Bryologist, vol. XVI, pp. 49-50 (*ubi syn.*), and "Part VIII", p. 84 (*clavis specierum*), 1914, this species had not previously been found north of Newfoundland. The present find is apparently an interesting extension of its known range, though Mr. Howe had, perhaps, overlooked Macoun's records from Labrador: Eagle River, L'Anse au Mort, and Blanc Sablon (Macoun 1902, p. 51, sub nom. *Ramalina dilacerta*).

Ramalina farinacea (L.) Ach. This has been recorded from Labrador: L'Anse au Clair (Macoun 1902, p. 50, sub syn. *Ramalina calicario* var. *farinacea*).

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[1] The species name of this should be *Alectoria vexillifera* (Nyl.) Stzbrgr., which is based on an older epithet than *cincinnata* Nyl. (E. Dahl, October 1946.)

Usnea Wigg. *U. dasypoga* (Ach.) Hornem. has been recorded from Labrador: Forteau (Macoun 1902, p. 61, sub syn. *Usnea barbata* var. *dasypoga*).[1]

237. **Neuropogon sulphureus** (König) Hellb.

Neuropogon (or *Usnea*) *sulphureus* (König) Hellb. was not found in Dr. Polunin's collection, where we might have expected it. It was collected in several places by Simmons during the Second Norwegian Arctic Expedition in the *Fram.* The plants that are in Herb. Oslo were named *Neuropogon melaxanthum* by Darbishire (1909, p. 38), but this is an Antarctic species. Again, James (1863, p. 96) recorded *Neuropogon taylorii* from Grinnell Land, but that species is also a strictly Antarctic one, and the record most probably stands for *Neuropogon sulphureus.*

238. **Siphula ceratites** (Wahlenb.) Fr.

This species, although not found in Dr. Polunin's collection, has been recorded from Labrador: Clearwater Lake (Macoun 1902, p. 170); Burwell or near (Hantzsch 1909, p. 220, *fide* Zahlbruckner); C. Baffin: Kivitung (Stein 1890, p. 99), Cape Searle (Dickie 1869, p. 465); also "Lancaster Sound"[2] (Dickie 1871, p. 34). If all these determinations are correct the species cannot be so very rare.

"*Siphula ceruloides* Nyl." has been reported from Labrador: Blanc Sablon "nondum secura, ulterius inquirenda" (Arnold 1896, p. 5). No plant of this name exists; it may be a misprint or a lapsus for *Siphula pteruloides* Nyl., although that is a plant from Peru and is hardly likely to be found in Labrador.

CALOPLACACEAE

Protoblastenia (Zahlbr.) Steiner.

P. cinnabarina (Sommerf.) Räs. has been recorded from Labrador: Fox Cove (Hulting 1896, p. 189, and Arnold 1896, p. 12).

239. **Protoblastenia rupestris** (Scop.) Steiner

This has been recorded from Labrador: L'Anse au Mort, f. *rufescens* (Arnold 1896, p. 12); Akpatok Island, var. *calva* (Smith 1934, p. 202, sub syn. *Protoblastenia calva*); Baker Lake, var. *irrubata* (Lynge 1935, p. 36), Banks Land, var. *calva* (Babington 1852, p. 277); Grant Land: Floeberg Beach, Franklin-Pierce Bay, and Walrus Island (Fries 1879, p. 360, sub syn. *Lecidea* (*Biatora*) *rupestris* (Scop.) Ach.); Port Kennedy (Hooker 1861, p. 88, sub syn. *Lecidea rupestris*).

240. **Blastenia tetraspora** (Nyl.) Rehm

Lake Harbour, very scarce.

Previously recorded from King William Land: Pfeffer River (Lynge 1935, p. 36).

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[1] "*Usnea hirta* Wiggers" and "*Usnea trichodea* Acharius" have been reported from Southampton Island by Raup (1936, p. 6).

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

241. **Blastenia atrocyanescens** Th. Fr.

This species has been recorded only from Grant Land: Cape Union (Fries 1879, p. 360).

Blastenia leucoraea (Ach.) Th. Fr. Labrador: Clearwater Lake (Macoun 1902, p. 103, sub nom. *Placodium sinapispermum*) ; and King William Land: Gjøa Harbour (Lynge 1921, p. 4).

242. **Blastenia melanocarpa** (Th. Fr.) Steiner

Reported only from Grant Land: winter quarters of H.M.S. *Alert*[1] (Fries 1879, p. 357, sub nom. *Caloplaca ferruginea* β *nigricans*).

243. **Fulgensia bracteata** (Hoffm.) Räs.[2]

Lake Harbour (1170a-18, 2295a-34) ; Arctic Bay (2589a-4).

Previously recorded from Grant Land: Floeberg Beach (Fries 1879, p. 358, sub nom. *Lecanora fulgens* β *alpina*).

244. **Caloplaca jungermanniae** (Vahl) Th. Fr.

Lake Harbour.

Supposed to be rare. It has previously been recorded only from Akpatok Island (Smith 1934, p. 202) ; King William Land: Gjøa Harbour (Lynge 1921, p. 4) ; Ellesmere: Cape Union, Floeberg Beach, Discovery Bay, and Cape Sabine (Fries 1879, p. 357). The latter records probably also cover *Caloplaca subolivacea.*

245. **Caloplaca subolivacea** (Th. Fr.) Lynge

Burwell; Pond Inlet, Arctic Bay; Craig Harbour.

This species was so plentiful in the lichens collected by the Fifth Thule Expedition that we may assume it to be common all over the Canadian Eastern Arctic.

Melville Peninsula; and Southampton Island; also the Magnetic North Pole[3], and Dolphin and Union Strait (Lynge 1935, p. 37).

246. **Caloplaca fraudans** (Th. Fr.) Oliv.

Wolstenholme, scarce in the collection.

This is the only record from the region.

247. **Caloplaca cinnamomea** (Th. Fr.) Oliv.

South Bay in Southampton Island; Cape Dorset, Lake Harbour.

This species has previously been recorded from King William Land: Gjøa Harbour (Lynge 1921, pp. 3-4, sub syn. *Blastenia ferruginea* var. *cinnamomea*), but it is difficult to say much about its frequency and distribution when the material is so meagre.

248. **Caloplaca elegans** (Link) Th. Fr.

Burwell; South Bay in Southampton Island; Wolstenholme, Wakeham Bay; Lake Harbour; Pond Inlet (coll. Frère Bazin), Arctic Bay; Dundas Harbour; Craig Harbour.

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[2] Distributed by Prof. Lynge as "*Caloplaca bracteata*". (N.P.)

[3] See footnote (1) on p. 320. (N.P., November 1946.)

This material, as well as the numerous literary records, proves the species to be a very common one, distributed all over the region. It has been recorded from the following localities: Labrador: L'Anse au Mort (Arnold 1896, p. 7), Fort Chimo; and Nottingham Island (Macoun 1902, p. 101, sub syn. *Placodium elegans*); Akpatok Island (Smith 1934, p. 202), Southampton Island (Sutton ex Raup 1936, p. 6); C. Baffin: "abundant" (Dickie 1869, p. 466, sub syn. *Parmelia elegans*), "Cumberland Sound" (Tuckerman 1879, p. 167); Melville Island (Brown 1824, p. cccv); Melville Peninsula: Igloolik, Barrow River, south shore of Fury and Hecla Strait; and "Fern Island"[1] (Hooker 1825, p. 422, sub syn. *Lecanora elegans*); N. Baffin; and Melville Peninsula; and several localities on the west coast of Hudson Bay; also Dolphin and Union Strait (Lynge 1935, p. 37); Chesterfield (Polunin MS. 1936); "Lancaster Sound"[2] (Dickie 1871, p. 34, sub syn. *Placodium elegans*), Assistance Bay (Babington 1852, p. 276, sub nom. *Parmelia elegans* α *miniata,* but it is improbable that *Caloplaca miniata* is to be found here), Port Kennedy (Hooker 1861, p. 87, sub nom. *Placodium murorum,* which is improbable), Port Kennedy and Cape Osborne (Hooker 1861, p. 87, sub syn. *Placodium elegans*); Ellesmere: Floeberg Beach, Black-Cliffs Bay, Westward-Ho Valley, Discovery Bay, Mount Stephenson, Walrus Island, and Brevoort Island (Fries 1879, p. 355), "Smith Sound" (James 1863, p. 96), Cape Baird, 81° 32′ (Lehnert and Greely 1886, p. 397, and 1888, p. 4, sub syn. *Placodium elegans*).

The var. *tenuis* of this species has been recorded from several places in different parts of Ellesmere (Fries 1879, p. 356); Melville Peninsula; and Churchill (Lynge 1935, p. 37).

249. **Caloplaca sorediata** (Vain.) DR.

Burwell; Chesterfield; Pond Inlet.

There is no previous report, but the species was collected on Akpatok Island by Polunin (Smith 1934, p. 202, sub nom. *Caloplaca granulosa* Steiner).

Several other species of *Caloplaca* have been recorded from the Canadian Eastern Arctic and Labrador, viz.:

250. **Caloplaca celata** Th. Fr.

Reported only from Grant Land: Floeberg Beach (Fries 1879, p. 356).

251. **Caloplaca citrina** (Hoffm.) Th. Fr.

Again known in these regions only from Grant Land: *Alert's* winter quarters[3] (Fries 1879, p. 356).

"Caloplaca ferruginea Th. Fr." has been reported from Akpatok Island (Smith 1934, p. 202). This name represents a section, rather than a species, and I have not seen the plant.

Caloplaca festiva (Ach.) Zw. Labrador: L'Anse au Clair (Arnold 1896, p. 8).

"Caloplaca granulosa Steiner" has been reported from Akpatok Island (Smith 1934, p. 202). I have seen the plant and found it to be *Caloplaca sorediata* (*See* above).

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[1] *Sic* but presumably a *lapsus calami* for Tern Island, 69° 33′ N., 80° 51′ W. off the coast of N. Baffin. (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[3] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

"Caloplaca murorum Th. Fr." has been reported from Akpatok Island (Smith 1934, p. 202). I have seen the plants, which I would refer to *Caloplaca elegans.*

252. **Caloplaca pyracea** (Ach.) Th. Fr.

Reported from Labrador: Hebron, on a twig (leg. . . . ?), L'Anse au Loup, "saxicola" (Arnold 1896, p. 8)[1]; Ellesmere: *Alert's* winter quarters[2], Mount Stephenson, Walrus Island, and Cape Sabine (Fries 1879, pp. 356-7). Most probably these records stand for more than one species of *Caloplaca.*

Caloplaca scopularis (Nyl.) Lettau. Labrador: Capstan Island (Macoun 1902, p. 179, sub nom. *Physcia scopularis*).

253. **Caloplaca stillicidiorum** (Vahl) Lynge. *See* Lynge 1928, p. 219, *ubi syn.*

This has been recorded from Labrador: Forteau (Arnold 1896, p. 7); C. Baffin: "frequent" (Dickie 1869, p. 467, sub nom. *Lecanora cerina*); King William Land: Gjøa Harbour (Lynge 1921, p. 4), the Magnetic North Pole[3] (Lynge 1935, p. 37); Port Kennedy (Hooker 1861, p. 87, as *Lecanora cerina* without substratum); Ellesmere: Floeberg Beach, Westward-Ho Valley, Discovery Bay, and Cape Sabine (Fries 1879, p. 356, sub syn. *Caloplaca cerini*). It is difficult to understand how this ubiquitous species could have escaped Dr. Polunin's attention.

THELOSCHISTACEAE

254. **Xanthoria candelaria** (L.) Arn.

Wolstenholme; Pond Inlet (coll. Frère Bazin).

Previously recorded from Labrador: Forteau "transiens in f. *polycarpam* !", and L'Anse au Loup (Arnold 1896, p. 7); Akpatok Island (Smith 1934, p. 202); C. Baffin: "Cumberland Sound" (Tuckerman 1879, p. 167); Wager Inlet and Sentry Island (Lynge 1935, p. 38); Cape Osborne (Hooker 1861, p. 87, sub syn. *Physcia candelaria*); Grant Land: Westward-Ho Valley (Fries 1879, p. 354). Robert Brown (1824, p. cccv) reported *"Borrera ? aurantiaca"* from Melville Island, which is improbable. To judge from the description, the present species may well have been meant.

255. **Xanthoria parietina** (L.) Th. Fr.

This has been reported from Labrador: L'Anse au Clair, f. *aureola* (Hulting 1896, p. 191); "Cumberland Sound" (Tuckerman 1879, p. 167); and Ellesmere: Walrus Island, Franklin-Pierce Bay, and Cape Sabine (Fries 1879, p. 354, f. *aureola*). The southernmost locality cannot be attacked, without seeing the plant; but my experience in other parts of the Arctic has shown me that *Xanthoria parietina* is a rather southern plant. Thus, in spite of Th. Fries's very high authority it might be desirable to check the determinations. In the last Polunin collection there was also a plant from Ellesmere: Craig Harbour (No. 2475a-7) that was at first referred to this species, and it was only on the final revision that it was removed to *Caloplaca elegans*. The lobes were for some reason ascending, with gonidia on either side.

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[1] There is also a specimen from Hebron in the Farlow Herbarium of Harvard University (Polunin No. 1052a-4) that Prof. Lynge himself referred to this species, although his omission of it from the present enumeration may perhaps mean that he later changed his decision. (N.P.)

[2] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[3] *See* footnote (1) on p. 320. (N.P., November 1946.)

Xanthoria polycarpa (Ehrh.) Rieber. Recorded from Labrador: Mount Faunce, 3,500-4,000 feet (Cummings 1902, p. 198), and Turners Head (Macoun 1902, p. 66, sub syn. *Theloschistes polycarpus*). It is a southern species, not to be expected in the Canadian Eastern Arctic, or even far to the south so high up as 3,500-4,000 feet.

BUELLIACEAE

256. **Buellia atrata** (Sm.) Anzi

Burwell; Chesterfield; Wakeham Bay; Cape Dorset, Lake Harbour; Clyde; Craig Harbour.

Although previously recorded from only a few localities in our area, this species must be common and widely distributed, to judge from the numerous plants in Dr. Polunin's collection. The previous records are:

Labrador: Red Bay and L'Anse au Loup (Arnold 1896, p. 15); and Baker Lake (Lynge 1935, p. 38, sub nom. *Buellia moriopsis*).

257. **Buellia disciformis** (Fr.) Mudd

var. **muscorum** (Hepp) Vain.

Dundas Harbour.

Previously recorded from Hudson Bay: York Factory (Leighton 1867, p. 198, "corticola"); "Cumberland Sound" (Tuckerman 1879, p. 168); Grant Land: Westward-Ho Valley, Floeberg Beach, Discovery Bay, and Cape Union (Fries 1879, p. 364, sub nom. *Buellia parasema* var. *muscorum* and var. *papillata*).

258. **Buellia geophila** (Sommerf.) Lynge, Medd. om Grønland, CXVIII, 8, p. 181 (1937), *ubi syn.*

Buellia disciformis (Fr.) Mudd. var. *triphragmia* Nyl.

Lake Harbour—scarce, as usual.

259. **Buellia leptocline** (Flot.) Kbr.

Devon Island, scarce and poorly developed.

260. **Buellia microplaca** (Vain.) Erichs., Verh. d. Bot. Vereins d. Prov. Brandenburg, LXXII, p. 47 (1930); Lynge, Medd. om Grønland, CXVIII, No. 8, p. 184 (1937).

Melanaspicilia microplaca Vain., Arkiv för Botanik, VIII, p. 77 (1909).

Arctic Bay—on quartzite, scarce.

The plant, which is an unicate, is evidently not healthy. The colour is a very pale greyish or yellowish brown, but I got the impression that this was not the original colour. The apothecia are in many cases more or less carbonized, and the spores poorly developed. The apothecia are very numerous, usually one in each areole. The black, concave to plane disk is surrounded by a darker wall; a section shows that this wall is formed by the surrounding thallus. The hypothecium is pale yellowish-brown. The hymenium is 70-75 (-80)μ high, the coherent paraphyses are brownish-capitate, and 2·5-3μ thick at their apices. Spores 12·5-14 x 7-7·5μ. Medulla J—, and KOH—; the medullary hyphæ are very adspersed with rather coarse grains.

Vainio's type specimen is a very small one. The present plant is larger, with a distinct, black hypothallus. I have not found it possible to distinguish it specifically from the *Vega* plant.

This is one of the more interesting lichens in Dr. Polunin's collection. The species was described by Vainio from Pitlekai near Bering Strait (*Vega* Expedition). It has been recorded by me from Disko in West Greenland, and now from the Canadian Eastern Arctic. There is also a find, so far unpublished, in our Spitsbergen collection, for I detected it in Belsund (Bell Sound) in 1926. It was there found in a very nitrophilous association. There are many undetermined Buelliae from Spitsbergen under consideration in Herb. Oslo, which may contain more of the present species. It is evidently widely distributed in the Arctic, and may perhaps be circumpolar. It was not found in my Novaya Zemlya collection made in 1921, but such inconspicuous plants are easily overlooked.

261. **Buellia alboatra** (Hoffm.) Th. Fr.

This has been recorded from Grant Land: Westward-Ho Valley and Floeberg Beach (Fries 1879, p. 364).

Buellia epipolia (Ach.) Mong. Labrador: L'Anse au Mort, "Kalkfelsen" (Arnold 1896, p. 15)—perhaps the same as the preceding species.

Buellia punctiformis (Hoffm.) Mass. Labrador: Forteau "an alten Brettern", L'Anse au Loup "an altem Holze", and Capstan Island "ebenso" (Arnold 1896, p. 15); Hudson Bay: York Factory (Leighton 1867, p. 199, sub nom. *Lecidea punctata* var. *denudata* Schaer.).

Buellia stigmatea Kbr. Baker Lake (Lynge 1935, p. 38).

262. **Buellia vilis** Th. Fr.

This has been recorded only from Grant Land: "Winter quarters of H.M.S. *Alert*"[1] (Fries 1879, p. 364).

The fewness of these Buelliae that are so far known from the Canadian Eastern Arctic and Labrador indicates that the lichenological investigation of this interesting region is still very far from complete. I am convinced that a trained lichenologist could not fail to find 20 species, or more, in one summer.

263. **Rinodina turfacea** (Wahlenb.) Kbr.

Craig Harbour.

Previously recorded from Labrador: East St. Modeste (Arnold 1896, p. 8): Melville Peninsula: Itividleriaq (Lynge 1935, p. 38); also Ellesmere: Cape Union, Floeberg Beach, Alexandra Haven (Fries 1879, p. 357, sub nom. f. *orbata* Ach.).

This is certainly a common species, and widely distributed, but largely overlooked.

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

264. **Rinodina roscida** (Sommerf.) Arn.

Arctic Bay; Craig Harbour.

Previously recorded from Akpatok Island (Smith 1934, p. 202); Fury and Hecla Strait; also the Magnetic North Pole,[1] and Dolphin and Union Strait (Lynge 1935, p. 39); Ellesmere: Floeberg Beach, Discovery Bay, Walrus Island, Franklin-Pierce Bay, and Alexandra Haven (Fries 1879, p. 357, sub syn. *Rinodina turfacea* f. *roscida*). With little doubt a species that is very common and widely distributed all over the Canadian Eastern Arctic.

265. **Rinodina hueana** Vain. *Vide* Lynge, Medd. om Grønland, CXVIII, 8, p. 190 (1937).

Arctic Bay.

A rather conspicuous plant; I am astonished that there is no other record of it from the Canadian Eastern Arctic.

266. **Rinodina confragosa** (Ach.) Kbr.

This has been recorded only from Grant Land: Cape Union (Fries 1879, p. 357, sub syn. *Rinodina exigua* β *confragosa*).

267. **Rinodina mniaraea** (Ach.) Kbr.

This has been recorded from Akpatok Island (Smith 1934, p. 202); also Grant Land: *'Alert's'* winter quarters[2] and Discovery Bay (Fries 1879, p. 357, var. *calcigena* Th. Fr.).

268. **Rinodina nimbosa** (Fr.) Th. Fr.

Recorded only from Melville Peninsula: Vansittart Island (Lynge 1935, p. 39).

PHYSCIACEAE

Anaptychia Kbr.

No member of this genus was found in Dr. Polunin's latest collections, but two species have been recorded from within or near the region in which we are most interested:

269. **Anaptychia ciliaris** (L.) Kbr.

var. **crinalis** Rabenh.

Reported from Labrador: L'Anse au Clair (Macoun 1902, p. 74, sub syn. *Physcia ciliaris* var. *crinalis*); and Akpatok Island (Smith 1934, p. 202). I have seen the latter plant and found it to be correctly identified.[3]

Anaptychia leucomelaena (L.) Vain. "Labrador", without locality (Macoun 1902, p. 74, as *Physcia leucomela* sic).

Physcia (Ach.) Vain. *Vide* Lynge, Physciaceae, Rabenh. Kryptogamen-Flora. . . ., pp. 37-188, Pls. I-XII (1935).

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[1] *See* footnote (1) on p. 320. (N.P., November 1946.)

[2] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[3] I.e., as to the species, to which alone the late Miss Annie Lorrain Smith referred it; the varietal refinement is Prof. Lynge's own. (N.P.)

270. **Physcia caesia** (Hoffm.) Hampe

Dundas Harbour.

Previously recorded from Labrador: L'Anse au Mort (Arnold 1896, p. 9); Baker Lake; and Sentry Island (Lynge 1935, p. 39); Southampton Island (Sutton ex Raup 1936, p. 6); and Grant Land: winter quarters of H.M.S. *Alert*[1] (Fries 1879, p. 354).

271. **Physcia muscigena** (Ach.) Nyl.

Burwell; South Bay in Southampton Island; Dundas Harbour; Craig Harbour.

This species is evidently common and widespread in the region, as was to be expected. Previously recorded from Labrador: L'Anse au Mort and L'Anse au Clair (Macoun 1902, p. 75, sub syn. *Physcia pulverulenta* var. *muscigena*); Akpatok Island (Smith 1934, p. 202); Melville Peninsula; and King William Land (Lynge 1935, p. 39): Gjøa Harbour (Lynge 1921, p. 7); Port Kennedy (Hooker 1861, p. 87, sub nom. *P. pulverulenta*); "Cumberland Sound" (Tuckerman 1879, p. 167, sub nom. *P. pulverulenta*); Ellesmere: Cape Union, winter quarters of H.M.S. *Discovery*,[2] Franklin-Pierce Bay, and Walrus Island (Fries 1879, p. 354, sub syn. *Physcia pulverulenta* β *muscigena*). Most probably *"P. pulverulenta* or *aquila"* from Cornwallis Island: Assistance Bay (Babington 1852, p. 276) also stands for the present species.

272. **Physcia** cf. **pulverulenta** (Schreb.) Sandst.

Chesterfield.

There was only a fragment of a sterile plant, growing over mosses (*Dicranum?*), so it was impossible to say whether the whole had lived on the bark of a shrub,[3] or on a mossy rock. It seems to me that the plant resembles *Physcia pulverulenta,* rather than *P. muscigena,* but the determination is uncertain.

Physcia pulverulenta has been recorded from "Cumberland Sound" (Tuckerman 1879, p. 167), but most probably this record stands for *Physcia muscigena* (q.v.). Of course, several other Physciae are found in the region, and the following species have been recorded in literature. On account of the polymorphous nature of the species it would be desirable to check the determinations.

Physcia ciliata (Hoffm.) DR. Labrador: Forteau, "steril an alten Brettern" (Arnold 1896, p. 6, sub nom. *Parmelia obscura* f. *cycloselis* Ach.); also "Labrador", without locality (Macoun 1902, p. 77, sub nom. *Physcia obscura* (Ehrh.) Nyl., which here may stand for the present species, and *"P. obscura* var. *endochrysea* Nyl." which may, however, possibly stand for *Physcia endococcina*).

Physcia crispa (Pers.) Nyl. Reported once from "Labrador" (Macoun 1902, p. 77), but it is highly improbable that this species, which is native "in regionibus tropicis et subtropicis" (Zahlbr., Cat. Lich. VII, p. 611), should be found in such a cool land. Can it be the next species?

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[1] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

[2] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

[3] If the material grew epiphytically it must have been quite close to the ground. I have substituted the word *shrub* for Professor Lynge's "tree", as none grows nearly so far north on the west coast of Hudson Bay. (N.P.)

273. **Physcia dubia** (Hoffm.) Lettau emend. Lynge

Apart from the above possibility, this has been reported from Labrador: East St. Modeste (Macoun 1902, p. 77, sub nom. *Physcia tribacia* (Ach.) Tuck.); Akpatok Island (Smith 1934, p. 202, sub nom. *Physcia hispida*); Grant Land: Egerton Valley, Black-Cliffs Bay, Westward-Ho Valley, Floeberg Beach, Franklin-Pierce Bay, and Walrus Island (Fries 1879, p. 354, sub nom. *Physcia stellaris* β *tribacia*).

Physcia stellaris (L.) Nyl. Labrador: Independent (Macoun 1902, p. 75).

274. **Physcia subobscura** Nyl.

Reported from Labrador: Mullins Cove (Macoun 1902, p. 76, sub nom. "*Physcia hispida* var. *leptalea* Ach. [syn.] *Parmelia marina* E. Nyl."—the latter synonym suggests the present species if the determination is correct); Grant Land: winter quarters of H.M.S. *Discovery*[1] (Fries 1879, p. 354, sub nom. *Physcia stellaris* var. *marina* E. Nyl.).

Physcia tenella Bitter. Labrador "an altem Holze" (Arnold 1896, p. 6).

LICHENES IMPERFECTI

275. **Thamnolia vermicularis** (Sw.) Ach.

Burwell; Churchill; South Bay in Southampton Island; Wolstenholme, Wakeham Bay; Cape Dorset, Lake Harbour; Clyde; Pond Inlet (here also coll. by Frère Bazin); Dundas Harbour; Craig Harbour.

The great number of finds in Dr. Polunin's collection, as well as in the literature, show us that this species is very common and widespread throughout the region. Previously recorded from:

Labrador: Battle Harbour (Macoun 1902, p. 139); Akpatok Island (Smith 1934, p. 202); C. Baffin: *no loc.* (Dickie 1869, p. 465), Kekerten (Stein 1890, p. 99); Port Bowen; and Somerset Island (Hooker 1826, pp. 130-1); Pangnirtung; and Arctic Bay (Polunin MS. 1934 and 1936), N. Baffin; and Melville Peninsula; and Southampton Island; and west side of Hudson Bay; and King William Land, and Dolphin and Union Strait—also var. *taurica* Schaer. from Georgina Island off Melville Peninsula (Lynge 1935, p. 36); Chesterfield (Polunin MS. 1936); Melville Peninsula: Barrow River (Hooker 1825, p. 425, sub syn. *Cenomyce vermicularis*); Southampton Island (Sutton ex Raup 1936, p. 6—var. *taurica*); Melville Island (Brown 1824, p. cccvii); King William Land: Gjøa Harbour (Lynge 1921, p. 7; "Lancaster Sound"[2] (Dickie 1871, p. 34); Ellesmere: winter quarters of *Alert*[3] and *Discovery*,[1] Hayes Sound—also var. *taurica* from Walrus Island, Franklin-Pierce Bay, and Cape Sabine (Fries 1879, p. 352).

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[1] I.e., Discovery Harbour, lat. 81° 43′ N. (N.P.)

[2] Collected on Philpots Island, lat. 74° 44′ N. (N.P.)

[3] I.e., Floeberg Beach, lat. 82° 27′ N. (N.P.)

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Tuckerman, Edward (1879): "List of Lichens collected in the Vicinity of Annanactook Harbor, Cumberland Sound, at about Lat. 67° N., Long. 68° 49′ W."; *Bull. U.S. Nat. Mus.,* No. 15, pp. 167-8.

Vainio, E. V.—*See* p. 304.

Wetherill, H. E. (1895): "List of Plants Obtained on the Peary Auxiliary Expedition of 1894"; *Bull. Geog. Club* [*Soc.*] *Philadelphia,* I, pp. 208-15.

Zahlbruckner, A. (1922-34): "Catalogus lichenum universalis"; vols. I-IX, *Leipzig.*

6. MUSCI[1]

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INTRODUCTION

Although work on the vascular plants of Arctic America is by no means lacking, the mosses seem in large part to have escaped attention in collecting and still more in the final published accounts. Certainly the collections of which details have been published have never been correlated in any way; nor have any phytogeographical conclusions been drawn from evidence based on the bryophytes. Even in the classic report of the Second *Fram* Expedition, no consideration is given to previous collections and very little to the general phytogeographical significance of the material, which, actually, is abundant and very important.

Furthermore, much of the literature on the Bryophyta of Arctic America has apparently been "lost" to bryologists, as is evidenced by the fact that several important papers have been completely overlooked by later workers. It is indeed surprising to note how many different authors, acquainted with neither the collections nor the published accounts of their predecessors, have asserted, even in recent times, that *their* report is the first one to be concerned with the bryophytes of a particular region.

A still more remarkable fact is that the mosses of Antarctic lands have received much more organized and conscientious attention than those of the Arctic—especially the American Arctic—as is shown by the voluminous and elaborate reports on the bryology of the Antarctic by Cardot, Brotherus, and others.

For these various and important reasons it is considered desirable to present here a reasonably full account of the collections of mosses made at various times and by various persons in the American Arctic.

The first bryophytes that are known to have been collected either within or near our area were brought back to England by the expedition of the elder Ross in 1818. These collections were made along the west coast of Greenland between latitudes 70° 30′ and 76° 12′ north, as well as at Possession Bay on Bylot Island, which falls within the scope of the present report. Unfortunately there is in the list of plants (*See* Brown 1819) no indication as to where each specimen originated, and according to Simmons (1913, p. 9) the labels of the specimens themselves do not offer much help. However, the species of mosses listed are ubiquitous arctic ones, so the question is not of any real importance.

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[1] **Papers from the Department of Botany and the Herbarium of the University of Michigan, No. 652.**

The three Parry expeditions in search of a "North-West Passage", following closely after the first voyage of Ross, made much larger and better documented collections. The first expedition (1819-1820), the botanical account of which comprised Robert Brown's famous "Chloris Melvilliana" (1824), explored and wintered on Melville Island, which is not within the area to be considered here. The second Parry expedition (1821-1823), however, made a large collection of mosses in the following places within our Eastern Arctic area (cf. W. J. Hooker 1825a): Upper Savage Island, two stations on Southampton Island, and many on the shores or adjacent islands of Melville Peninsula—e.g., at Repulse Bay, which marks the southeastern base of the peninsula, along the east coast at Barrow River and other points on the mainland, and on Igloolik and Neerlo Nakto Islands in the vicinity of Fury and Hecla Strait, which separates the peninsula on the north from northwestern Baffin Island (Cockburn Land).[1] The third Parry expedition returned to England with collections from Port Bowen in northwestern Baffin and from Somerset Island, although only one or two bryophytes were included (cf. W. J. Hooker, 1826). The only other report on arctic bryophytes from early expeditions was again by the elder Hooker (cf. 1825b), on the plants collected by Captain G. F. Lyon in 1824 "upon a few low islands which were met with in, or near, the position assigned to Southampton Island."

J. D. Hooker (cf. 1857) has reported on the Bryophyta collected by Dr. Lyall, naturalist to Sir Edward Belcher's (Franklin searching) expedition "in Lancaster Sound, Beechey Island, Wellington Channel, and Northumberland Sound, amongst the Polar islands." The younger Hooker (1861, p. 85) also reported three mosses from the east coast of Devon Island, collected by Dr. Walker during the searching voyage under Sir F. M'Clintock in the *Fox,* which was successful in at least proving that Franklin's expedition had failed and perished.

Mr. James Taylor of Edinburgh (cf. 1862, 1863), while a surgeon on whaling vessels, during the years 1856-61, made a very considerable collection of plants—including the largest number of species of mosses known at the time from the American Arctic. He says: "On the east side of Davis Straits the space examined extends from Disco Island to the southern part of Melville Bay; and on the west side, from Cape Enderby to Pond's Bay. On the east side the excursions were chiefly along the coast, rarely exceeding two miles inland, on the west side also the coast-line alone was explored, excepting at Cape Searle and Cumberland Sound, where explorations were made as far as five or six miles inland." The account of Taylor's bryophytes and lichens (cf. Dickie 1869, from pp. 461-2 of which the preceding passage was quoted) was published in a well-known scientific journal, but in spite of its obvious importance seems to have escaped the notice of later workers. This lapse may in part be due to the fact that some of Taylor's material was sent for identification to William Mitten, then the ranking bryologist of Europe, so that these plants were cited in various other works (such as Mitten (1865), Lesquereux and James (1884), Macoun and Kindberg (1892), and Macoun (1902)). Yet the very fact that a few specimens from a large collection were cited regularly should surely have led to the "discovery" of Dickie's important report. Taylor was apparently the first of our collectors to furnish first-hand notes concerning the habitats of his specimens and the association of the species. He says (in Dickie 1869, p. 462) "The variety of surface is very considerable; lofty hills, valleys, and deep ravines abound; in some districts are extensive plains covered with shingle, where *Conostomum boreale* and *Rhacomitrium lanuginosum* are in the greatest profusion; again, there are large tracts where *Ceratodon purpureus* and *Psilopilum arcticum* are plentiful. Elsewhere, at various elevations, there are morasses and peatbogs, where species of *Sphagnum* and other aquatic mosses find a suitable habitat. In other quarters we meet with steep cliffs, in the crevices of which, along with Ferns and other plants, there grow various species of *Bryum* and *Hypnum*; the numerous boulders of various sizes are covered with tufts of *Andreaea,* etc."

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[1] Plants were also collected at "N.E. Coast of America, lat. 67½ north." This is not, as has often been assumed on Baffin Island but instead on Melville Peninsula, to which I have accordingly transferred the records. (N.P.)

Taylor's account is the first description of the habitats of Arctic mosses, but in spite of its brevity it has hardly been surpassed except relatively recently.

In connection with another whaling enterprise, Dr. E. P. Philpotts made a collection in 1866 (cf. Dickie 1871) on the island that had previously been thought to be only the easternmost promontory of Devon Island, and which is now named in his honour.

The Hayes expedition of 1860-61 charted the shores of Ellesmere Island between latitudes 77 degrees and 78 degrees north, adding Hayes Sound and Bache Peninsula to Arctic maps. The mosses of this expedition were named by Thomas James a reliable American bryologist, but reported by him (cf. Durand, James, and Ashmead 1864) in a manner so ambiguous that it is impossible to tell which species came from the Canadian side of Smith Sound and which from Greenland. Through the kindness of Dr. F. W. Pennell and Miss Grace Tees, of the Philadelphia Academy of Sciences, I have been able to see as much as is still in existence of the original specimens, which are very small and unsatisfactorily provided with data.

Three species of mosses from Hall's *Polaris* expedition of 1870-73 have been reported (in *Nature* IX, 1874, p. 405), though I have been unable to find the specimens. More important are the bryophytes collected by the Nares expedition, 1875-76, which were identified by Mitten (1878, pp. 313-9) and formed the basis for the best account of Arctic American Bryophyta to that date. Critical notes are given for each species, and its general distribution is discussed.

Two mosses are listed as having been collected on the north side of Jones Sound by the Peary Auxiliary Expedition of 1894 (cf. Wetherill 1895). In spite of the much earlier report of the Hayes expedition, Bryant (1895, p. 162) says of these specimens "The list of plants collected . . . contains the first specimens collected in Ellesmere Land." Bryhn (cf. 1908) has reported on the mosses collected apparently by Peary himself in 1902 at Fort Conger and by Dr. L. J. Wolf in 1906 at Wrangel Bay and Lincoln

Bay, all in the north of Ellesmere. These collections were also seen by Mrs. Britton (1909, p. 106). An additional small collection of mosses made by Dr. Wolf in 1906 on the northern shore of Ellesmere has been reported upon by Williams (1918, pp. 210-11).

Large collections of plants including Bryophyta were made at the American Polar Station at Lady Franklin Bay (1881-1883), under the command of Lieut. A. W. Greely. They had to be abandoned, but some plants were brought out in Greely's private collection, and the mosses, which came from several stations in northernmost Ellesmere, were identified by Rev. E. Lehnert, of Washington, D.C., and the records published by Greely (1886, pp. 393-5, 1888, pp. 16-17). This list is so full of obvious errors that none of the specimens can be cited with security until the whole collection is revised critically. However, Dr. Maxon states (*in litt.*) that the Greely mosses are not in the U.S. National Herbarium, so this problem may not be solved for some time.

An enormous collection of bryophytes was made by the Second *Fram* Expedition, 1898-1902. The mosses came from almost the whole shoreline of southern Ellesmere, the northwest coast of Devon Island, and also from the newly discovered Sverdrup Islands to the west. The report upon the Bryophyta of Ellesmere Island and some adjacent regions, although subject to criticism in certain respects, is a classic of its sort, and will stand permanently as a monument to the indefatigable zeal of the collectors, primarily Dr. Simmons (cf. Bryhn 1906-07, and Rydberg 1908). A total of 290 species of bryophytes are listed by Bryhn, of which 57 are Hepaticae, the remainder Musci. It is of some significance, in the interest of Arctic American phytogeography, to point out here that only 115 species of vascular plants are reported from most of this area (cf. Simmons 1906); this is less than half the number of bryophytes, even after the deduction of those new species described by Bryhn that are at all doubtful.

Before the *Fram* expedition, geological and biological field work had been done by the Canadian Geological Survey in the Hudson Bay region, and also in northernmost Quebec, Labrador, and southern Baffin. The first Canadian reports of mosses seem to be those of Bell (cf. 1880, 1884, and 1901), in which unfortunately the collection data are often very ambiguous or lacking, usually because of the presentation of the species in tables. For instance, in his report on the plants collected at widely separated points in the Hudson Bay region, Bell (cf. 1880) tabulates his two mosses simply as "plants crossing the Arctic circle." In the 1884 report the collections are also grouped in an ambiguous manner. For instance, Bell groups "Mansfield, Digge's and Nottingham Islands", which are all "at the western end of" Hudson Strait. This is perhaps defensible, but his third group "Cape Prince of Wales and Ashe's Inlet, or North Bluff, in the middle of the Strait", is almost useless for phytogeographical purposes, because the former place is on the mainland of Quebec and the latter is on the north shore of Hudson Strait. In his third report (1901) he tabulates eight species of Musci from "Baffin Land between Amadjuak Bay and Chorkback Inlet." Many of Dr. Bell's specimens have been re-reported, with fuller habitat and geographical data, by Macoun in his "Catalogue" (1892, 1902), and in some cases by Kindberg (e.g. 1893). Unfortunately, the undependable identifications of Kindberg more than offset his full citation of habitat and place of collection. A couple of mosses from Big Island, south shore of Baffin Island, are mentioned incidentally in a report on some plants from much farther west, collected by Tyrrell (cf. 1898). Later explorations of Hudson Bay by A. P. Low brought further bryological collections, some of which are reported upon by Macoun (1902) and others by Kindberg (1900, 1907, and 1909-10). Collections by George Comer from the Hudson Bay region have also been reported (by Renauld and Cardot 1896, and Cardot and Thériot 1900).[1]

The Canadian Arctic Expedition of 1913-18 worked only to the west of our area, but later on detailed botanical studies of Akpatok Island in Ungava Bay were made by Polunin (cf. 1934a, 1934b, and 1935), and of Southampton Island in Hudson Bay by Sutton (cf. Jennings 1936). Dr. Polunin's discussions of the ecology of the mosses of Akpatok Island are the only detailed accounts of the ecology of arctic bryophytes in existence, and point the way toward much further work in other areas.

Studies in Arctic Canada, some of them more or less incidental, have also been made by Danish workers, in conjunction with their detailed scientific investigation of Greenland. Thus Harmsen and Seidenfaden (1932) report mosses from Craig Harbour in Ellesmere Island, and from Totnes Road, Exeter Sound, in Baffin Island. Apparently ignorant of the collections made by the British, they say "As far as we have been able to find out, Baffin Island was fully unknown with respect to mosses prior to our visit there in 1928 . . . so the following list of the mosses on Baffin Island is probably the first one ever published."

Hesselbo (cf. 1937), in the Report of the Fifth Thule Expedition, has published an account of the mosses collected by Peter Freuchen, Therkel Mathiassen, and others at many stations on Melville Peninsula, northwestern Baffin Island (Cockburn Land), the west coast of Hudson Bay, and the hinterland thereof.

In addition to the above collections, there are scattered references to occasional (and sometimes otherwise unpublished) Arctic American bryophyte specimens in various monographs and manuals—e.g., Lesquereux and James (1884), Britton (1913a, 1913b), Williams (1913), Brotherus (1923), and Grout (1928-40).

More interesting than the material in any of the preceding categories are the species that have been collected relatively recently, for which full data have been provided, but which have not yet been identified and published. Several large series of such materials have fallen into my hands for identification, and, in the aggregate, equal or perhaps exceed all the previous collections put together. They have come through the energetic and efficient work of several collectors:

(1) J. D. Soper (cf. 1930) as naturalist to the Canadian Arctic Expedition of 1923 brought back bryophytes from Pangnirtung Fiord in Cumberland Sound, from Pond Inlet, and from Strathcona Sound in Admiralty Inlet, all in Baffin Island; from Beechey Island and Dundas Harbour in Devon

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[1] Here should also be mentioned the 13 species of mosses collected by Sir William MacGregor on "Chidley Peninsula, lat. 60°-60° 30′ N." in Labrador, and reported in the Kew Bulletin of Miscellaneous Information (Anon. 1907, pp. 85-6). I have taken the liberty of inserting the records of the better-known species in the systematic part of this paper; but there remain "*Barbula fallax*, Hedw.", "*Bryum*, sp., cf. *B. Duvalii*, Voit.", and "*Campylopus* sp.", which need further inspection. (N.P.)

Island; and from Craig Harbour in Ellesmere Island. Mr. Soper went back to Baffin Island in 1924, under the auspices of the National Museum of Canada, and stayed until 1926, making collections of bryophytes in various parts of Cumberland Sound (Blacklead Island, Kingua Fiord, and Pangnirtung) during 1924, along Koukdjuak River and on Fox Island, Nettilling Lake, during 1925; and at Cape Dorset in 1926. His third expedition, during 1928 and 1929, under the direction of the Canadian Department of Interior, was spent in southwestern Baffin Island, where collections were made at Camp Kungovik on the "Blue Goose Prairie." Mr. Soper's collections, submitted for study by the National Herbarium of Canada, are notable for their generous size, good preservation, and full data.[1]

(2) Dr. Nicholas Polunin, of Oxford, Yale, and Harvard Universities, whose bryological work on Akpatok Island has already been cited, made numerous collections during the Canadian Eastern Arctic Expeditions of 1934 and 1936 in the Hudson Bay and Strait regions and on the Eastern Arctic Islands. During the 1934 expedition he made collections of mosses at Churchill on the west coast of Hudson Bay, on Southampton Island, at Wolstenholme in northernmost Quebec, at Port Burwell in northernmost Labrador, at Cape Dorset, Lake Harbour, Pangnirtung, Clyde 'River', and Pond Inlet, all in Baffin Island, at Dundas Harbour in Devon Island, and at Craig Harbour in Ellesmere Island. During the Canadian Eastern Arctic Expedition of 1936 all the 1934 stations were revisited and the following additional places in northern Quebec were visited: Fort Chimo[2] and Payne Bay[2] in Ungava Bay, Diana Bay,[2] Wakeham Bay, and Sugluk on the south shore of Hudson Strait, and Cape Smith and Port Harrison on the east coast of Hudson Bay. Further new stations of the 1936 expedition were Chesterfield on the west coast of Hudson Bay, Mansel (Mansfield) Island in northeastern Hudson Bay, and Arctic Bay in northern Baffin Island. Very many of the data in the following list of species are based upon the large collections made by Dr. Polunin.[3]

(3) Père Arthème Dutilly, O.M.I., Naturaliste des Missions de l'Arctique, has made many collections of bryophytes in the Canadian Arctic and Subarctic since 1933. Many of his gatherings made during the summer of 1936 coincide with those of Dr. Polunin. These specimens are cited here; but the remainder, through restrictions of time, cannot be included in the present report. However, they mostly originated from outside our area. The material has been made available through Dr. David Linder of the Farlow Herbarium of Harvard University and Professor Hugh O'Neill of the Catholic University of America.[4]

(4) At the time of writing (winter 1937-38), the most recent collection is that of Professor David Potter of Clark University, botanist to the 1937 MacMillan expedition to northern Labrador and southernmost Baffin Island. In this report are included the mosses that he collected at Jok-sit

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[1] Cf. Steere (1939)—Sept. 1946.

[2] Fort Chimo, Payne Bay, and Diana Bay I did not visit myself, but specimens were kindly collected for me there by the Geodesists C. H. Ney and Joe Courtright, who made a "side trip" around Ungava Bay during our Eastern Arctic Expedition of 1936. (N.P.)

[3] The whereabouts of individual specimens are indicated in the usual manner, but owing to some specimens never reaching me and others being lost when Mr. Sherrin's "South London Botanical Institute" was destroyed by a bomb just after I had lectured there, it must unfortunately be recorded that the set of my 1936 specimens at Oxford is far less complete than the citations suggest. (N.P., October 1946.)

[4] Cf. Steere (1941)—Sept. 1946.

Harbour, Bowdoin Harbour, and Lady Job Harbour in northernmost Labrador, Acadia Harbour in Resolution Island, and York Harbour and Point Brewster in southeastern Baffin Island.

From these four large collections, the volume of unidentified specimens that have passed through my hands during the preparation of this report is far greater than the sum of the collections upon which all previous reports have been based, if we except the large collections from the Second *Fram* Expedition. Furthermore, nearly all the species identified by Bryhn (except in the genus *Bryum*) from Simmons's collections were rediscovered in these recent collections, as well as many additional species.[1]

Because of the time limitation, not all the specimens cited from the literature, in the following list, could be examined. Fortunately, most of the material collected by Simmons and others in the Canadian Arctic Archipelago has been re-examined and the identifications either confirmed or corrected by Grout and other American bryologists during the last few years for Grout's "Moss Flora of North America" (1928-40). Revisions of several groups of Musci are still in progress, so that although the actual specimens are now in the hands of specialists in America the results of their investigations are not yet available for the purpose of making corrections in the following list. As noted in the appropriate place farther on, the treatment of one genus, at least, is essentially a compilation from the literature, and must remain so pending the completion of the monograph of the genus for the Moss Flora of North America.[2]

Most of the earlier identifications were made by Hooker, Mitten, and other reputable bryologists. Dickie (cf. 1869, p. 461) sent the species of which he was not certain to Mitten and Wilson for identification, and his two reports on mosses seem to be remarkably accurate. Some of the specimens cited by Dickie are in Mitten's herbarium, which is now at the New York Botanical Garden. Needless to say, they are correctly named. Some of the identifications made by Bryhn are obviously erroneous, and others are open to question. In spite of these occasional lapses, however, Bryhn's naming is on the whole fairly trustworthy. The low quality of the identifications made by Kindberg has already been mentioned.

In the following detailed list of species, specimens are cited from the literature if they have been identified in the first place by reputable bryologists and the report verified by later collections from the same locality or at least the same district. If the report is the only record of the species in the Canadian Eastern Arctic, unless the specimen has actually been seen, it is viewed with a good deal of distrust, and the species either included tentatively or definitely excluded, according to its present known range and the person responsible for its identification. The following families are represented:

	PAGE
Sphagnaceae	377
Andreaeaceae	382
Fissidentaceae	383
Ditrichaceae	384
Seligeriaceae	388
Dicranaceae	389

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[1] Cf. also Wynne and Steere (1943)—Sept. 1946.

[2] Cf. Andrews (1940)—Oct. 1946.

Encalyptaceae 397
Pottiaceae 399
Grimmiaceae 408
Funariaceae 415
Splachnaceae 416
Bryaceae 419
Mniaceae 434
Aulacomniaceae 438
Meeseaceae 440
Catoscopiaceae 442
Bartramiaceae 442
Timmiaceae 444
Orthotrichaceae 446
Climaciaceae 448
Hedwigiaceae 449
Theliaceae 449
Leskeaceae 450
Thuidiaceae 450
Amblystegiaceae 451
Brachytheciaceae 464
Entodontaceae 468
Hypnaceae 471
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Polytrichaceae 476

I wish to thank Dr. A. LeRoy Andrews of Cornell University and Mr. E. B. Bartram for their generous help in the identification of specimens. To Dr. H. A. Gleason of the New York Botanical Garden, Dr. F. W. Pennell of the Philadelphia Academy of Sciences, Mr. A. E. Porsild of the National Herbarium of Canada, Dr. D. H. Linder of the Farlow Herbarium of Harvard University, and Dr. W. R. Maxon of the U. S. National Herbarium, I should like to express my appreciation of their kindness in loaning specimens and furnishing information.

In the list of species that follows, the members of the genus *Sphagnum* are arranged in accordance with the system of Andrews (1913). The arrangement of the other Musci conforms, with few exceptions, to the plan of Brotherus (1924-25) in Engler and Prantl's "Die natürlichen Pflanzenfamilien" (ed. 2). As far as possible (with the exception of *Sphagnum,* of course), Hedwig's "Species Muscorum Frondosorum" (1801) has been used as the nomenclatural basis of this work.

SYSTEMATIC PART

SPHAGNACEAE[1]

1. **Sphagnum compactum** DC., Fl. Franç. (ed. 3), II, p. 443 (1805).

General Distribution. Nearly circumboreal. Northern Europe, Siberia, Atlantic Islands, Iceland, Greenland (where it reaches the northernmost limit of its range); in northern North America ranging from Alaska eastwards to Labrador and southwards to the Gulf of Mexico.

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[1] Professor A. LeRoy Andrews of Cornell University has had the kindness to identify the greater part of the *Sphagnum* collections made by Polunin (in 1936), Soper, Dutilly, and Potter. In the interpretation of the species, as well as their arrangement in the list, I have followed Dr. Andrews's monograph of the North American species of *Sphagnum* (North American Flora, XV, pp. 1-31 (1913)).

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic, and, considering its "southern" nature, is rather naturally from the southernmost part of the region.[1]

7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 85, sub syn. *Sphagnum rigidum* Schimp.).[2]
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X)[3] 1476a. Wolstenholme, Dutilly 1936 (F,U,A) 784.

2. **Sphagnum aongstromii** Hartm., Skand. Fl. (ed. 7), p. 399 (1858).

General Distribution. Circumpolar. Arctic and subarctic Europe (including Spitsbergen, where it reaches its northern limit), Siberia, Alaska, and the Yukon; also in the Canadian Eastern Arctic.

E. Arctic Occurrence. The collection cited below is apparently the first report from the Canadian Eastern Arctic.

4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2611a.

3. **Sphagnum squarrosum** Crome, Deutsch. Laubm., p. 24 (1803).

General Distribution. Circumboreal. Throughout northern Europe and North America; Siberia, Novaya Zemlya, Spitsbergen, Jan Mayen, Iceland, Greenland.

E. Arctic Occurrence. In spite of the wide distribution of the species, the following collections of Polunin and Dutilly seem to be the first that have been made in the Canadian Eastern Arctic.

3. N. Baffin: *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2562a.
4. C. Baffin: Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a, Dutilly 1936 (F,U,A) 1550.
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1211a.
7. N. Labrador: Burwell, Polunin 1936 (F,A,X) 1096a.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1461a, 1476a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 590a, Polunin 1936 (F,A,X) 2246a.

4. **Sphagnum teres** (Schimp.) ngstr., in Hartm., Skand. Fl. (ed. 8), p. 417 (1861).

General Distribution. Circumboreal. Northern Europe and Asia, Greenland; in northern North America from Alaska and the Arctic Archipelago southwards into the northern United States.

E. Arctic Occurrence. This variable species, which is often represented by much reduced forms, is not well known in the Canadian Eastern Arctic, in spite of its wide circumboreal range. The only previous reports, which are none too definite, are from Bell's early collections cited below.

2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*)[3] 748* 758* 774* 2498a.
4. C. Baffin: *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 195-196, Polunin 1934 and 1936 (F,A,X,B*) 552* 2613b; Kingua Fiord, Soper 1924 (O,A) 120-121.
7. N. Labrador: Burwell, Polunin 1936 (F,A,X) 1096a.
8. N. Quebec: "Cape Wales and Stupart's Bay" (Bell ex Macoun and Kindberg 1892, p. 6).

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[1] *Sphagnum compactum* was also identified by Mr. W. R. Sherrin, A.L.S., of the British Museum, in a small collection that I made at Nullataktok Bay (which lies on the Atlantic coast of Labrador, a little to the south of our Eastern Arctic area) on the return voyage from Akpatok Island in 1931. (N.P.)

[2] Cf. Warnstorf (1911, p. 144) *ubi syn.* I have taken the liberty of inserting this record. (N.P.)

[3] For explanation of these symbols and asterisks, *See* p. 7, (General Introduction). (N.P.)

5. **Sphagnum lindbergii** Schimp., Versuch. Torfm., p. 67 (1858).

General Distribution. Circumboreal. Northern Europe and Asia, Greenland; in North America from Alaska and the Arctic Archipelago southwards to the eastern United States.

E. Arctic Occurrence. The following specimens collected by Polunin and Soper apparently afford the first records of the species in the Canadian Eastern Arctic.

4. C. Baffin: *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 187 188; Kingua Fiord, Soper 1924 (O,A) 156 157 158.
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1211a 1233a.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1476a. Wolstenholme, Polunin 1934 (B*) 237*.

6. **Sphagnum recurvum** P. de Beauv., Prodr. Aetheog., p. 88 (1805).

General Distribution. Cosmopolite. Northern Europe and Asia, South America, Africa; northern North America southward to Colorado in the west and to the Gulf of Mexico in the east.

E. Arctic Occurrence. The following specimen (identified by Mr. W. R. Sherrin) seems to be the only one of this species that has been collected in the Canadian Eastern Arctic.

4. C. Baffin: Pangnirtung, Polunin 1934 (B*) 491*.

7. **Sphagnum fimbriatum** Wils., in Hook. fil., Fl. Antarct., p. 398 (1846).

General Distribution. Circumboreal in the Northern Hemisphere; also occurring in the Southern Hemisphere. Northern Europe including Spitsbergen, where it reaches its northernmost known limit, Novaya Zemlya, Siberia; Greenland; in northern North America it extends from Alaska eastwards to Devon Island and southwards to the United States.

E. Arctic Occurrence. The distribution of this familiar species in the Canadian Eastern Arctic was quite obscure until recently. Although Dickie (1869, p. 462) was the first to report it from the region, on the basis of the collections of James Taylor, a whaling-ship surgeon, his report is so vague that it is impossible to localize the record geographically. He says, simply, "Davis Straits: east and west sides; common."

2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 (B*) 783*.
3. N. Baffin: Pond Inlet, Bazin 1934 (M*).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 462); Clyde, Polunin 1936 (F,A,X) 2604a; Cumberland Sound, Soper 1923 (O,A) 636; Pangnirtung, Polunin 1934 (B*) 581*.
7. N. Labrador: "Cape Chudleigh" (Bell ex Macoun and Kindberg 1892, p. 1, sub nom. var. *arcticum*).
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1461a.
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 7).
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 639 652 653 660 661.

8. **Sphagnum girgensohnii** Russ., Beitr. Torfm., p. 46 (1865).

General Distribution. Circumboreal. Europe, Asia, Greenland; widespread in northern North America, including the United States.

E. Arctic Occurrence. Before the collections of Polunin and Soper, this species was known in the Canadian Eastern Arctic only from a single gathering by Simmons in the Far North.

1. ELLESMERE: Lastraea Valley (Simmons ex Bryhn 1906, p. 52).
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 698*.
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a; Cumberland Sound, Soper 1923 (O,A) 640.

9. **Sphagnum robustum** (Russ.) Warnst. & Röll, Flora, LXIX, p. 109 (1886).

S. russowii Warnst.

General Distribution. Circumboreal. Northern Europe and Asia, Greenland; northern North America southwards into the United States.

E. Arctic Occurrence. Polunin's collection cited below is apparently the first that has been made of this species in the Canadian Eastern Arctic.

4. C. BAFFIN: Pangnirtung, Polunin 1936 (F,A,X) 2611a.[1]

10. **Sphagnum fuscum** (Schimp.) H. Klinggr., Schr. Phys.-Ök. Ges. Königsb., XIII, p. 4 (1872).

General Distribution. Circumboreal. Central and northern Europe (including Spitsbergen), Siberia, Novaya Zemlya, Jan Mayen, Greenland; widespread and common in northern North America southwards to the northern United States.

E. Arctic Occurrence. The several collections of this species made by Dr. Polunin in 1934 (and identified by Mr. Sherrin) are apparently the first from the region, in spite of the frequency of the species farther south.

3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 717* 739*.
4. C. BAFFIN: Clyde, Polunin 1934 (B*) 646*.
5. S. BAFFIN: Cape Dorset, Polunin 1934 (B*) 288* 301*.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 236* 237*.

11. **Sphagnum warnstorfii** Russ., Sitz.-Ber. Nat.-Ges. Dorpat, VIII, p. 315 (1888).

General Distribution. Circumboreal. Northern and eastern Europe, Siberia, Iceland, Greenland; in northern North America extending from Baffin Island and Labrador westwards to Alaska and southwards to the northern United States.

E. Arctic Occurrence. So far as I know, Dr. Polunin's two collections cited below are the first of the species from the Canadian Eastern Arctic.[2]

3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 695*.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1170a.

12. **Sphagnum capillaceum** (Weiss) Schrank, Baier. Fl. II, p. 435 (1789).

S. acutifolium Ehrh.

General Distribution. Circumboreal. Northern Europe and Asia; common and widely distributed in northern North America, from Alaska east to Devon Island and south to Labrador and the United States.

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[1] Also collected by me in 1931 at Nullataktok Bay, which lies on the Atlantic coast of Labrador slightly to the south of our area. The specimen was determined by Mr. W. R. Sherrin as *S. russowii*, which, following Andrews (1913, p. 25) and others, I have, accordingly, taken the liberty of inserting as a synonym. (N.P.)

[2] *Sphagnum warnstorfii* was, however, earlier (1931) collected by me at Nullataktok Bay a little to the south of our area—cf. footnote (1) on p. 378. (N.P.)

E. Arctic Occurrence. There are several reports of this species from the Canadian Eastern Arctic, but, rather curiously, there is only one specimen of it among the large collections of Polunin, and none in those of Soper, Dutilly, or Potter. It is possible that some, at least, of the older records refer to var. *tenellum,* rather than to the typical form of the species.

2. DEVON ETC., ISLANDS: Philpots Island, Bethune Bay (Philpotts ex Dickie 1871, p. 33, sub syn. *S. acutifolium* Ehrh.).
3. N. BAFFIN: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 21, sub syn. *S. acutifolium,* with the remark that "This species very rarely extends into the Arctic area and is thus new to the Arctic American Archipelago").
4. C. BAFFIN: Dickie's ambiguous report (1869, p. 462) of *S. acutifolium* from "Davis Straits; east and west sides, common," belongs here.

(?S. BAFFIN: Bell's report (1884, p. 46) of *S. acutifolium* from "Cape Prince of Wales and Ashe's Inlet, or North Bluff, in the middle of the Strait," is even more puzzling than the one of Dickie's just cited, and is included here only for bibliographic completeness).

7. N. LABRADOR: Burwell, Polunin 1931 and 1934 (B*) incl. 448*.

var. **tenellum** (Schimp.) Andrews, N. Amer. Fl., XV, p. 28 (1913).

General Distribution. Circumboreal. Northern Europe and Asia, including Siberia, Novaya Zemlya, and Iceland; Greenland; common in northern North America southward into the United States.

E. Arctic Occurrence. Until recently, the known distribution of this variety in the Canadian Eastern Arctic was very restricted. However, the report of the mosses of the Fifth Thule Expedition, as well as the large collections made by Polunin, Soper, and Dutilly, indicate that it has in reality a very wide range in the region, and is even common there.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1934 (B*) 783*.
3. N. BAFFIN: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 11, sub nom. *S. rubellum* Wils.), Bazin 1934 (M*), Polunin 1934 (B*) 739*.
4. C. BAFFIN: Clyde, Polunin 1934 (B*) 637* 646*; Cumberland Sound (Taylor ex Dickie 1869, p. 462, sub nom. *S. rubellum*), Soper 1923 (O,A) 637a; Pangnirtung, Soper 1924 (O,A) 71 72, Polunin 1934 (B*) 491* 538* 552; Kingua Fiord, Soper 1924 (O,A) 147. *Nettilling Lake,* Fox Island, Soper 1925 (O,A) 627a.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1211a 1258a 2295a; Amadjuak Bay, Soper 1926 (O,A) 894.
7. N. LABRADOR: Burwell, Polunin 1934 (B*) 447* 451*.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1461a 1476a. Wolstenholme, Polunin 1934 (B*) 237*.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2293a, Dutilly 1936 (F,U,A) 763.[1]

13. **Sphagnum plumulosum** Röll, Flora, LXIX, p. 89 (1886).

General Distribution. Circumboreal. Northern Europe and Asia, Greenland; northern North America southward to New Jersey in the east and California in the mountains of the west.

E. Arctic Occurrence. This species has not hitherto been reported from the Canadian Eastern Arctic, although from the numerous specimens collected by Dr. Polunin one might suspect that it is rather widespread there.

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[1] From regions lying to the west of our area are given further records of this species, by Hesselbo (1937, p. 11, sub nom. *S. rubellum*). To these we may add the collection by Père Dutilly on the shores of Baker Lake, determined by Dr. Steere and preserved for example in U. (N.P.)

4. C. Baffin: *Cumberland Sound,* Pangnirtung, Polunin 1934 (B*) 491* 563*.
5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,M,X,B*) 362* 1233a.
7. N. Labrador: Burwell, Polunin 1931 (B*).
8. N. Quebec: Wolstenholme, Polunin 1934 (B*) 237*.

14. [1]**Sphagnum quinquefarium** (Lindb.) Warnst., Hedwigia, XXV, p. 222 (1886).

General Distribution. Subarctic and alpine regions of Europe and North America; Japan.

E. Arctic Occurrence. Not previously reported from the Canadian Eastern Arctic, but identified by Mr. W. R. Sherrin, A.L.S., of the British Museum, in my collections made in 1931 in the extreme southeast corner of our area (N.P.).[1]

7. N. Labrador: Burwell, Polunin 1931 (B*).

ANDREAEACEAE

15. **Andreaea rupestris** Hedw., Sp. Musc. Frond., p. 47 (1801).

A. petrophila Ehrh.

General Distribution. An alpine and subalpine species with an almost cosmopolitan distribution, being widespread in Europe, Asia, southernmost South America, Tasmania, New Zealand, and Greenland; in North America it is known from the Arctic Archipelago and Alaska to Labrador, and extends southwards into the mountainous parts of the United States.

E. Arctic Occurrence. There are a few scattered reports of this species from the Canadian Eastern Arctic, which are well supplemented by the collections of Polunin and Potter.

2. Devon, etc., Islands: *Philpots Island,* Bethune Bay (Philpotts ex Dickie 1871, p. 33).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 462); *Cumberland Sound,* Pangnirtung, Polunin 1934 (B*) 582*.
5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14.
7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 85).
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1480c. Wolstenholme, Polunin 1934 (B*) 236*.

16. **Andreaea papillosa** Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXIII, p. 557 (1867).

A. rupestris Hedw. var. *acuminata* B.S.G.

General Distribution. An arctic-alpine species occurring in northern Sweden, Spitsbergen; Yukon, Greenland, and the Canadian Eastern Arctic.

E. Arctic Occurrence. This species had been reported from the Canadian Eastern Arctic only in the collections made by the Second *Fram* Expedition, but it is probably more widely distributed in the region, the small size of the plants having most likely prevented its detection and collection.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley *c.fr.,* Bedford Pim Island *c.fr.,* and Fram Harbour *c.fr.* (Simmons ex Bryhn 1906, p. 52). *South Coast,* Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 52).
7. N. Labrador: Burwell, Polunin 1931 and 1936 (F,A,X*,B*) 1114a *c.fr.*

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[1] I have taken the liberty of, and must bear full responsibility for, mentioning this species in the present report. It was also found by me in 1931 at Nullataktok Bay, which lies slightly to the south of our area on the Atlantic coast of Labrador—*det.* W. R. Sherrin. (N.P.)

17. **Andreaea blyttii** B.S.G., Bry. Eur. fasc. 62-4, Andr. 25, Pl. DCXXXV (1855).

General Distribution. Arctic Scandinavia, Spitsbergen, Greenland; Baffin Island; in western North America from Alaska to California.

E. Arctic Occurrence. The old report by Dickie (1869, p. 462) of this species from "Cape Searle, Davis Straits, Taylor" has been confirmed by several bryologists including Sharp (cf. 1936), even if the species has not been collected in the Canadian Eastern Arctic since.

4. C. Baffin: Cape Searle (Taylor ex Dickie 1869, p. 462).

18. **Andreaea crassinervia** Bruch, Abh. Akad. Münch., I, p. 279 (1832).

A. rothii Web. & Mohr var. *crassinervia* Mönk.

General Distribution. Circumboreal. Arctic and alpine Europe, Asia, Greenland (where it reaches its northern limit). In North America it occurs in the mountains of the east, from Baffin Island and Labrador to Georgia.

E. Arctic Occurrence. The specimens cited here, which were identified by Mr. W. R. Sherrin, apparently represent the first collections of the species in the Canadian Eastern Arctic.

4. C. Baffin: Clyde, Polunin 1934 (B*) 630* 631*.

19. **Andreaea hartmanii** Thed., Nya Bot. Notis. 1849, p. 78.

General Distribution. Northern Norway and Sweden, reaching latitude 66° 28′ N.; northernmost Quebec.

E. Arctic Occurrence. This species has apparently not been reported previously from the New World. I have not seen Dr. Polunin's specimen, which was named by Sherrin, but knowing Mr. Sherrin's discriminating eye and the rather clear-cut features of the species I have very little doubt that the identification is correct.

8. N. Quebec: Wolstenholme, Polunin 1934 (B*) 216*.

Fissidentaceae

20. **Fissidens viridulus** (Web. & Mohr) Wahlenb., Fl. Lapp., p. 334 (1812).

F. impar Mitt.

General Distribution. A widespread circumboreal species. Europe, Asia, Greenland; also in northern North America whence it extends southwards into the United States, especially in the east.

E. Arctic Occurrence. Still known in the Canadian Eastern Arctic only from the material collected by the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord (Simmons ex Bryhn 1906, p. 58). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 58).

21. **Fissidens exiguus** Sull., Mem. Amer. Acad. Sci., n.s. III, p. 60 (1846).

General Distribution. This exclusively North American species extends from Ellesmere Island southwards to southeastern Canada and the northern United States east of the Rocky Mountains.

E. Arctic Occurrence. As with the preceding species, this was first collected in the Canadian Eastern Arctic by Simmons, and is still known in our area only from his collection.

1. ELLESMERE: Goose Fiord (Simmons ex Bryhn 1906, p. 57).

22. **Fissidens arcticus** Bryhn, Rept. 2nd "Fram" Exped., No. 11, p. 57 (1906).

General Distribution. Since its original description from material collected in southern Ellesmere, this species has been collected only in Greenland. In spite of Grout's recognition (1936, p. 15) of it as a valid species, it seems to me to be very close to the preceding. In arctic material, in which dwarfed and impoverished specimens are the rule rather than the exception, it seems hardly safe without intimate study to propose even the most extreme form as a new species.

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Lastraea Valley (Simmons ex Bryhn 1906, p. 57). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 57). *West Coast,* Lands End and 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 57).

23. **Fissidens osmundioides** Hedw., Sp. Musc. Frond, p. 153 (1801).

General Distribution. Circumboreal. Europe (especially in the north, including Spitsbergen where it reaches its northern limit); northern North America from Ellesmere Island to the Yukon and south into the United States.

E. Arctic Occurrence. There are only a very few reports of this species from the Canadian Eastern Arctic. Indeed, for some reason, the species of *Fissidens* are rarely collected, and this one is no exception, although apparently common.

1. ELLESMERE: *Hayes Sound region,* Cape Viele, Lastraea Valley, and Twin Glacier Valley (Simmons ex Bryhn 1906, p. 58).
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a.
6. MELVILLE PENINSULA: Cape Elizabeth[1] (Bangsted ex Hesselbo, 1937, p. 14).

24. **Fissidens adiantoides** Hedw., Sp. Musc. Frond., p. 157 (1801).

General Distribution. Widespread. In Europe from Scandinavia to the Mediterranean; northern Africa; Asia; almost throughout North America, though here often confused with *F. cristatus* Wils.

E. Arctic Occurrence. Although this species is common in southern Canada, Simmons's collections seem still to constitute the only known material of the species from the Eastern Arctic regions.

1. ELLESMERE: *South Coast,* Fram Fiord and Harbour Fiord (Simmons ex Bryhn 1906, p. 58).

DITRICHACEAE

25. **Ditrichum pusillum** (Hedw.) E. G. Britton, N. Amer. Fl., XV, p. 62 (1913).

D. tortile Brockm.

Leptotrichum tortile C. Müll.

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[1] Elizabeth Point of recent maps, and of Part I. (N.P.).

General Distribution. Throughout Europe and Asia; also in northern Africa and the Atlantic islands; very common in North America, ranging from Alaska to Labrador, and southwards to California in the west and to the Gulf States in the east.

E. Arctic Occurrence. In spite of the general unreliability of Kindberg's identifications, and the additional circumstance that this is the only report, I am inclined, because of the generally wide distribution and common occurrence of the species, to accept it as occurring in our area.

9. ISLANDS IN HUDSON, ETC., BAYS: Nottingham Island (Bell ex Macoun and Kindberg 1892, p. 45).

26. **Ditrichum lineare** (Sw.) Lindb., Acta Soc. Sci. Fenn., X, p. 108 (1871).

D. vaginans Hampe

General Distribution. Circumboreal. Europe. In eastern North America from Hudson Bay and Prince Edward Island southwards to the Carolinas and Missouri.

E. Arctic Occurrence. The following specimen, identified by Mr. Sherrin, is apparently the first of this species from the Canadian Eastern Arctic.

9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1934 (B*) 130*.

27. **Ditrichum flexicaule** (Schwaegr.) Hampe, Flora, L, p. 182 (1867).

Leptotrichum flexicaule Hampe

Distichium macounii C. Müll. & Kindb. ex Macoun

General Distribution. Circumpolar—one of the most common of all alpine, arctic, and subarctic Bryophyta. Europe, Asia, northern Africa, and the Atlantic islands, Greenland (where it reaches its northern limit at Low Point (lat. 83° 06′ N.) on the north coast—(cf. Hesselbo 1923, p. 274); throughout northern North America from Alaska to Ellesmere Island and southwards into the northernmost United States.

E. Arctic Occurrence. This extremely variable species is already well known in the Canadian Eastern Arctic, although the present large collections enable us to fill what previously appeared to be considerable gaps in its distribution.

1. ELLESMERE: *Grant Land,* Lincoln Bay and Wrangel Bay (Wolf ex Bryhn 1908, p. 15); Fort Conger (Peary ex Bryhn 1908, p. 15). *Hayes Sound region,* Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 59). *South Coast,* Fram Fiord (Simmons ex Bryhn 1906, p. 59); Craig Harbour, Polunin 1936 (F,A,X) 2475a 2476a 2487a; Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 59). *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 59).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 59, "very common everywhere in its various forms, and in great abundance, but always sterile") (*transl.*). *Devon Island,* Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*) 742* 2498a 2501a; Beechey Island, Soper 1923 (O,A) 318; "Wellington Channel" (Lyall ex Hooker 1857, p. 119).
3. N. BAFFIN: Pond Inlet, Polunin 1934 and 1936 (F,A,X,B*) 695* 2470. *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b; Arctic Bay, Polunin 1936 (F,A,B) 2562a 2589a 2590b.
4. C. BAFFIN: *West Coast,* Koukdjuak River, Soper 1925 (O,A) 649 698.

5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 17. *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a 2295a 2309a; Cape Dorset, Soper 1926 (O,A) 676b (f. *brevifolium* (Kindb.) Grout). *West Coast,* Camp Kungovik, Soper 1929 (O,A) 17, 19.
6. Melville Peninsula: Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 13); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 13). *Vansittart Island* (Freuchen ex Hesselbo 1937, p. 13); Danish Island (Freuchen ex Hesselbo 1937, p. 13).
7. N. Labrador: Burwell, Polunin 1936 (F,A,X) 1082a 1096a; Bowdoin Harbour, Potter 1937 (Z,A) 12-10a *c.fr.*
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B* cf. Polunin 1934a, p. 203, sub nom. *Leptotrichum brevifolium* Kindb.). *Southampton Island,* South Bay, Dutilly 1936 (F,U,A) 767d, Polunin 1936 (F,A,X) 2294a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 592c.

28. **Saelania glaucescens** (Hedw.) Broth., in Engler & Prantl, Die nat. Pflanzenfam. I, 3, 1, p. 300 (1901).

Ditrichum glaucescens Hampe

General Distribution. Circumboreal. Alpine and arctic Europe and Asia, Spitsbergen, Greenland; widespread in northern North America, occurring in Ellesmere Island and extending across the continent and southwards to the northern United States, but not common.

E. Arctic Occurrence. This species, although widespread in arctic regions, is usually rare. The only specimens known from our area are those of Simmons cited below.

1. Ellesmere: *Hayes Sound region,* Bedford Pim Island (Simmons ex Bryhn 1906, p. 59). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 59).

29. **Ceratodon purpureus** (Hedw.) Brid., Bryol. Univ. I, p. 480 (1826).

General Distribution. Cosmopolitan—occurring in all parts of the world from the Arctic and Antarctic into subtropical regions. The northernmost known locality is apparently Low Point, lat. 83° 06′ N. on the north coast of Greenland—cf. Hesselbo (1923, p. 274).

E. Arctic Occurrence. Common and widely distributed throughout the Canadian Eastern Arctic. Still further localities are now known through the collections of Polunin, Soper, Dutilly, and Potter.

1. Ellesmere: Bryhn says (1906, p. 59), on the basis of Simmons's specimens, "It is everywhere in this region one of the most common mosses, but, as a rule, sterile" (*transl.*). *Grant Land,* Lincoln Bay and Wrangel Bay (Wolf ex Bryhn 1908, p. 15); Fort Conger (Peary ex Bryhn 1908, p. 15). *South Coast,* near Smith Island (Wetherill 1895, p. 213); Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 873* 2487a.
2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 (B*) 763.
3. N. Baffin: Igluluarsuit (?= "Uglularssuit"—Freuchen ex Hesselbo 1937, p. 13). *Admiralty Inlet,* Saputit (Freuchen ex Hesselbo 1937, p. 13).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 463, "common"). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a 2613a *c.fr.*; Blacklead Island, Soper 1924 (O,A) 298.
5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 19 *c.fr.*; York Harbour, at foot of Grinnell Glacier, Potter 1937 (Z,A) 15. *South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 442* 1170a *c.fr.*, 1233a *c.fr.*; Amadjuak Bay, Soper 1926 (O,A) 903 *c.fr.*; "between Amadjuak Bay and Chorkback Inlet" (Bell 1901, p. 37); Cape Dorset, Polunin 1934 and 1936 (F,A,X,B*) 274* 2381a *c.fr.*

6. Melville Peninsula: Ugli and Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 13). Repulse Bay (Parry ex Hooker 1825a, p. 415, sub syn. *Didymodon purpureum*). Vansittart Island (Freuchen ex Hesselbo 1937, p. 13).
7. N. Labrador: Burwell, Polunin 1931, 1934, and 1936 (F,A,X,B*) 467* 892* 1082 *c.fr.*, 1114a 2446a, Dutilly 1936 (F,U,A) 1645b *c.fr.*, 1648c *c.fr.*
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1419a. Wolstenholme, Polunin 1934 (B*) 204* 235*, Dutilly 1936 (F,U,A) 926 *c.fr.*, 927.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

30. **Distichium hagenii** Ryan, in Philib., Rev. Bryol., XXIII, p. 36 (1896).

General Distribution. This is a species of exclusively arctic and subarctic distribution, occurring in northernmost Scandinavia, Novaya Zemlya, Siberia, Greenland, and the American Arctic Archipelago.

E. Arctic Occurrence. Still known in North America only from the Canadian Eastern Arctic, and there only in the collections made by the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Skräling Island, Lastraea Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 59). *South Coast,* Fram Fiord, Musk-ox Fiord, and Goose Fiord (Simmons ex Bryhn 1906, p. 59).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 59).

31. **Distichium capillaceum** (Hedw.) B.S.G., Bry. Eur. fasc. 29-30, p. 4, Pl. CXCIII (1846).

Swartzia montana (Lam.) Lindb.

General Distribution. An alpine, subarctic, or arctic species of almost cosmopolitan distribution. Throughout northern North America southwards to the northernmost United States (to Arizona in the Rocky Mountains); in all the mountains of Europe and Asia; Spitsbergen; Africa; the Andes of South America and also the Magellan Strait region; Tasmania; New Zealand; Antarctica. It reaches its northernmost known limit on the north coast of Greenland at Low Point, lat. 83° 06′ N. (cf. Hesselbo 1923, p. 274, sub syn. *Distichium montanum* (Lam.) Hagen).

E. Arctic Occurrence. This species has been reported from the Canadian Eastern Arctic probably as often as any other moss. The abundant collections of Polunin and Soper show that it is of almost complete dispersal in our area.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 15); Lincoln Bay (Wolf ex Bryhn 1908, p. 15, and cf. Williams 1918, p. 211). The species is plentiful throughout the area studied by the *Fram* expedition (cf. Bryhn 1906, p. 59), also at Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 826* 828* 872* 875* 2487a 2475a *c.fr.* 2476a *c.fr.*
2. Devon, etc., Islands: *Devon Island,* Dundas Harbour, Soper 1923 (O,A) 294f, Polunin 1934 (B*) 742* 754* 755* 811* 822*; Beechey Island (Lyall ex Hooker 1857, p. 119), Soper 1923 (O,A) 318d; "between Beechey Island and Northumberland Sound" (Lyall ex Hooker 1857, p. 119).
3. N. Baffin: Pond Inlet, Polunin 1934 (B*) 651* 678*; Navy Board Inlet (Lyall ex Hooker 1857, p. 119). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b 380d; Arctic Bay, Polunin 1936 (F,A,X) 2554b 2575a 2590.
4. C. Baffin: Dickie's Report (1869, p. 463) of the species from "Davis Straits: east and west sides; common" must be placed here.
5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 405* 409* 411* 439* 1170a 2309a.

6. Melville Peninsula: Igloolik and Neerlo Nakto (Parry ex Hooker 1825a, p. 415, sub. syn. *Didymodon capillaceum*). "N.E. Coast of America. lat. 67¼[1] north" (Parry ex Hooker 1825a, p. 415, sub. syn. *Didymodon capillaceum*); Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 13); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 13). *Vansittart Island* (Freuchen ex Hesselbo 1937, p. 13); Danish Island (Freuchen ex Hesselbo 1937, p. 13).
7. N. Labrador: Burwell, Polunin 1931 (B*); bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Nottingham Island (Bell 1884, p. 46; cf. Macoun and Kindberg 1892, p. 39). *Southampton Island* (?Lyon ex Hooker 1825b, p. 197, sub nom. *Didymodon*); South Bay, Polunin 1934 (B*) 130*.

32. **Distichium inclinatum** (Hedw.) B.S.G., Bry. Eur. fasc. 29-30, p. 5, Pl. CXCIV (1846).

Swartzia inclinata Hedw.

General Distribution. Circumboreal. Europe, Caucasus; central and northern Asia, northern Africa, Greenland; uncommon in North America, but widespread in the Arctic Archipelago.

E. Arctic Occurrence. Reported several times from widely separated localities in the Canadian Eastern Arctic.

1. Ellesmere: *Grant Land,* Floeberg Beach (Feilden ex Mitten 1878, p. 313); Discovery Harbour (Hart ex Mitten 1878, p. 318). *Hayes Sound region,* Twin Glacier Valley and Fram Harbour (Simmons ex Bryhn 1906, p. 60). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 60); Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 878* 2475a. *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 60).
2. Devon, etc., Islands: *Devon Island,* Castle Island (Simmons ex Bryhn 1906, p. 60); Dundas Harbour, Polunin 1936 (F,A,X) 2523a.
3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2590b.
4. C. Baffin: "Cumberland Sound" (Taylor ex Dickie 1869, p. 463).
5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a *c.fr.*
7. N. Labrador: bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay, Dutilly 1936 (F,U,A) 768c, Polunin 1936 (F,A,X) 2294a.

SELIGERIACEAE

33. **Blindia acuta** (Hedw.) B.S.G., Bry. Eur. fasc. 33-6, p. 3, Pl. CXIV (1846).

General Distribution. Circumboreal. Europe, Caucasus, central Asia, Greenland, Spitsbergen (where it reaches its northernmost known limit). In northern North America it extends from Alaska to Ellesmere, and southwards into the northernmost United States.

E. Arctic Occurrence. Usually on wet rocks. In the literature dealing with our area, this species is represented only by the indefinite report of Dickie cited below, and by the *Fram* report.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford (Simmons ex Bryhn 1906, p. 59).

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[1] Misprint for ½. (N.P.)

4. C. Baffin: Dickie's report (1869, p. 463) of this species from "Davis Straits: frequent on east and west sides", based on Taylor's specimens, belongs somewhere here.
7. N. Labrador: Burwell, Polunin 1936 (F,A,X) 1114.
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1934 (B*) 130*.

34. **Seligeria polaris** Berggr., K. Sv. Vet.-Akad. Handl., XIII, p. 41 (1875).

General Distribution. Northernmost Norway and Finland, Spitsbergen, Ellesmere Island.

E. Arctic Occurrence. Known in North America only from the Canadian Eastern Arctic, from material collected by the *Fram* expedition.

1. Ellesmere: *Hayes Sound region,* Cape Rutherford (Simmons ex Bryhn 1906, p. 58). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 58). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 58).

DICRANACEAE

35. **Dicranella cerviculata** (Hedw.) Schimp., Coroll. Bry. Eur., p. 13 (1855).

General Distribution. Nearly circumpolar, occurring in Arctic Europe, Siberia, Greenland, Iceland; in Arctic America southwards to the northernmost United States.

E. Arctic Occurrence. Apparently very rare in the Canadian Eastern Arctic.

1. Ellesmere: Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 22).
4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 22).

36. **Dicranella heteromalla** (Hedw.) Schimp., Coroll. Bry. Eur., p. 13 (1855).

General Distribution. Circumboreal. Europe, Asia; common and widely distributed in North America from Ellesmere and Newfoundland to Alaska, extending southwards through the United States into Central America.

E. Arctic Occurrence. The only report of this species from the Canadian Eastern Arctic is on the basis of material collected by the second *Fram* expedition at Goose Fiord, c. 76° 30′ N. on the south coast of Ellesmere. If the identification is correct, as it should be with such a common plant, it represents the northernmost known limit of the species.

1. Ellesmere: Goose Fiord (Simmons ex Bryhn 1906, p. 54).

37. **Cnestrum schisti** (Wahlenb.) Hagen, K. Norske Vid. Selsk. Skr. 1914, 1, p. 24 (1915).

Cynodontium schisti (Wahlenb.) Lindb.

General Distribution. Circumboreal. Central Europe and Scandinavia, Siberia, Greenland, American Arctic Archipelago; in western North America from Alaska to Montana and Wyoming, also Michigan.

E. Arctic Occurrence. Rare but apparently widely distributed in the Canadian Eastern Arctic, where it reaches its northern limit at Lastraea Valley, 78° 52′ N. in the Hayes Sound region of Ellesmere.

1. ELLESMERE: Lastraea Valley (Simmons ex Bryhn 1906, p. 54).
3. N. BAFFIN: Pond Inlet, Polunin 1936 (A) 2470a (1 plant, *c.fr*).

38. **Cynodontium polycarpum** (Hedw.) Schimp., Coroll. Bry. Eur., p. 12 (1855).

Oncophorus polycarpus Brid.

General Distribution. Circumboreal. Europe, Asia, Greenland; in North America not common, but widely distributed from Alaska to the Arctic Archipelago and south to Labrador and the northernmost United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from two widely separated localities.

2. DEVON, ETC., ISLANDS: Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. BAFFIN: Cumberland Sound (Taylor ex Dickie 1869, p. 462).

39. **Cynodontium strumiferum** (Hedw.) De Not., Epil. Briol. Ital, p. 280 (1869).

General Distribution. Circumboreal, with much the same American range as the preceding species, but less known to the north and extending farther south in the United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from a somewhat questionable report from Parry's Second Expedition.

(? MELVILLE PENINSULA: "South shore of the Strait of the Fury and Hecla" (Parry ex Hooker 1825a, p. 416, sub nom. *Dicranum strumiferum*).)

40. **Cynodontium gracilescens** (Web. & Mohr) Schimp., Coroll. Bry. Eur., p. 12 (1855).

Oncophorus gracilescens Lindb.

General Distribution. Circumboreal. Mountains of Europe, especially in the Alps; in boreal North America very rare, but widely distributed.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the report of the *Fram* expedition.

1. ELLESMERE: Lastraea Valley (Simmons ex Bryhn 1906, p. 54).

41. **Dichodontium pellucidum** (Hedw.) Schimp., Coroll. Bry. Eur., p. 12 (1855).

General Distribution. Circumboreal. Throughout alpine and subarctic Europe; Caucasus, Japan; in North America extending from Alaska eastwards to Ellesmere Island and southwards into the United States.

E. Arctic Occurrence. In the Canadian Eastern Arctic known only from Ellesmere Island, from specimens identified by Nils Bryhn.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 15). *Hayes Sound region,* Beitstad Fiord (Simmons ex Bryhn 1906, p. 54). *South Coast,* Musk-ox and Goose Fiords (Simmons ex Bryhn 1906, p. 54).

42. **Dicranoweisia crispula** (Hedw.) Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXI, p. 230 (1864).

Weissia crispula Hedw.

General Distribution. Iceland, Jan Mayen, Spitsbergen, Arctic Europe and Asia, Novaya Zemlya; in North America from Yukon to Ellesmere and south to the northernmost United States; also in Greenland, where it reaches lat. 82° 53′ N. at Lemming Fiord on the north coast.

E. Arctic Occurrence. Widely distributed in the Canadian Eastern Arctic, although known from only a few localities before the large collections of Polunin and others were studied.

1. ELLESMERE: *Hayes Sound region,* Payer Harbour (Feilden ex Mitten 1878, p. 313), Cape Viele, Cape Rutherford *c.fr.*, Cocked Hat Island, Bedford Pim Island *c.fr.*, and Fram Harbour (Simmons ex Bryhn 1906, p. 54). *South Coast,* Craig Harbour, Dutilly 1936 (F,U,A) 1231a, Polunin 1936 (F,A,X) 2475a; Harbour Fiord *c.fr.*, and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 54).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 54).
4. C. BAFFIN: Dickie's report (1869, p. 462) of the species from "Davis Straits: frequent on both east and west sides," based on Taylor's specimens, must be placed here.
5. S. BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14 *c.fr. South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 408* 2295a; Cape Dorset, Polunin 1936 (F,A,X) 2381a.
7. N. LABRADOR: Burwell, Polunin 1931 and 1936 (F,A,X,B*) incl. 2446a *c.fr.;* Lady Job Harbour, Potter 1937 (Z,A) 13 *c.fr.*; Bowdoin Harbour, Potter 1937 (Z,A) 12 *c.fr.*

43. **Dicranoweisia cirrhata** (Hedw.) Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXI, p. 230 (1864).

General Distribution. Widely ranging through Europe and North America, but with a more southerly tendency than the preceding species; northern Africa, Caucasus, Kashmir, central Asia.

E. Arctic Occurrence. Known only from the very southernmost parts of the Canadian Eastern Arctic, from the two reports cited below.

7. N. LABRADOR: Burwell, Polunin 1931 (B*).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

44. **Oncophorus virens** (Hedw.) Brid., Bryol. Univ. I, p. 399 (1826).

Cynodontium virens Schimp.

General Distribution. Circumboreal. Mountains of central Europe; northern Europe, north and central Asia, Greenland; in northern North America from Alaska to Ellesmere and south to the United States.

E. Arctic Occurrence. Apparently rare but widely distributed in the Canadian Eastern Arctic. The early records of Hooker (1825a, p. 416) and Dickie (1869, p. 462, and 1871, p. 33) are so hopelessly confused with the following species that it is useless even to cite them.

1. ELLESMERE: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 55). *South Coast,* Fram, Harbour, and Goose (*c.fr.*) Fiords (Simmons ex Bryhn 1906, p. 55). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 55).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2246a *c.fr.*

45. **Oncophorus wahlenbergii** Brid., Bryol. Univ. I, p. 400 (1826).

Cynodontium wahlenbergii Hartm.

General Distribution. Circumboreal. Central and northern Europe, central Asia, and Siberia; Greenland (where it reaches its northern limit on the north coast at Low Point, lat. 83° 06′ N.); in North America from Alaska to Ellesmere and south into the United States.

E. Arctic Occurrence. Very common in the Canadian Eastern Arctic, as is especially well shown by the collections of Polunin and Dutilly, although previously it had not been collected so often.

1. ELLESMERE: *Hayes Sound region,* Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 55). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 55). *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 55).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2563a *c.fr.*
4. C. BAFFIN: "Cape Adair and Cape Searle" (Taylor ex Dickie 1869, p. 462). *Cumberland Sound* (Taylor ex Dickie *l.c.*); Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 550* 551*, 2611a *c.fr.*
5. S. BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14 *c.fr.* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 411* 1170a.
6. MELVILLE PENINSULA: Vansittart Island (Freuchen ex Hesselbo 1937, p. 13).
7. N. LABRADOR: Lady Job Harbour, Potter 1937 (Z,A) 13 *c.fr.* Bowdoin Harbour, Potter 1937 (Z,A) 12 *c.fr.*
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Dutilly 1936 (F,U,A) 767a.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 590f, 592a *c.fr.,* Polunin 1936 (F,A,X) 2233a, 2246a *c.fr.*

46. **Arctoa hyperborea** (Smith) B.S.G., Bry. Eur. fasc. 33-6, p. 5, Pl. LXXXVII (1846).

Dicranella cerviculatula Kindb.

General Distribution. Arctic Scandinavia, Greenland; also northern North America, where it reaches the United States only on Mount Hood, Oregon.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the western end of the Hudson Strait region.

8. N. QUEBEC: Digges Island (Bell ex Kindberg 1893, p. 18).
9. ISLANDS IN HUDSON, ETC., BAYS: Nottingham Island (Bell ex Macoun 1902, p. 191).

47. **Kiaeria starkei** (Web. & Mohr) Hagen, K. Norske Vid. Selsk. Skr. 1914, 1, p. 114 (1915).

Dicranum starkei Web. & Mohr

General Distribution. Circumboreal; in northern North America southwards to the northernmost United States.

E. Arctic Occurrence. Not at all common, and so far found only in the southernmost parts of our area.

7. N. LABRADOR: Burwell, Polunin 1934 (B*) 451*.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 188*.

(?ISLANDS IN HUDSON, ETC., BAYS: "Mansfield" (Mansel), Digges, or Nottingham Island (Bell 1884, p. 46).)

48. **Kiaeria blyttii** (B.S.G.) Broth., Laubm. Fennosk., p. 87 (1923).

Dicranum blyttii B.S.G.

Dicranum schistii Lindb.

General Distribution. Circumboreal. Not rare in Scandinavia, but less common in central Europe (the Alps); Greenland; in northern North America extending southwards to the northernmost United States.

E. Arctic Occurrence. Not known from the Canadian Eastern Arctic until 1934, when several collections were made by Polunin in widely separated localities (*fide* Sherrin).

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1934 (B*) 741*.
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 669*.
4. C. BAFFIN: Clyde, Polunin 1934 (B*) 617*.
5. S. BAFFIN: Lake Harbour, Polunin 1934 (B*) 409*.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1934 (B*) 126* (Sutton ex Jennings 1936, p. 7).

49. **Kiaeria glacialis** (Berggr.) Hagen, K. Norske. Vid. Selsk. Skr. 1914, 1, p. 125 (1915).

Dicranum arcticum B.S.G.

General Distribution. A real circumpolar species of the Arctic zone. Scandinavia, Greenland; Labrador, Alaska, and the Yukon in continental North America.

E. Arctic Occurrence. Previously only once reported from the Canadian Eastern Arctic, and then from the southernmost part.

7. N. LABRADOR: "Labrador Coast, Hudson Strait" (Low ex Macoun 1902, p. 192, sub nom. *Dicranum molle*). Burwell, Dutilly 1936 (F,U,A) 1715c.[1]

50. **Dicranum elongatum** Schleich., in Schwaegr., Suppl. I, 1, p. 171 (1811).

D. sphagni Wahlenb.

General Distribution. Circumpolar. Iceland, Jan Mayen, Spitsbergen, Arctic Europe and Asia, Novaya Zemlya, Greenland (where it reaches its northernmost limit at Cape Salor and John Murrays Island, lat. 82° 54′ N. on the north coast); Arctic America south to the mountains of Montana and New England.

E. Arctic Occurrence. This has long been known to have a wide distribution in the Canadian Eastern Arctic, and there are many reports of its existence there. It is apparently one of the commonest of all species of *Dicranum,* and often occurs in pure tufts and great abundance.

1. ELLESMERE: *Hayes Sound region,* Fort Juliane, Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 57). *South Coast,* Harbour Fiord *c.fr.,* and Goose Fiord (Simmons ex Bryhn 1906, p. 57). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 57).
2. DEVON, ETC., ISLANDS: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Soper 1923 (O,A) 298c.
3. N. BAFFIN: Pond Inlet (Lyall ex Hooker 1857, p. 119); 'Igluluarsuit' (Freuchen ex Hesselbo 1937, p. 13). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2590a.

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[1] Also collected by me in 1936 at Hebron, on the Atlantic Coast of Labrador a little to the south of our area. (N.P.)

4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2591a; the ambiguous report by Dickie (1869, p. 462) "Davis Straits: frequent on the west side," based on the collections of Taylor, also belongs here.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2295a; Cape Dorset, Soper 1926 (O,A) 668.
6. MELVILLE PENINSULA: Igloolik (Freuchen ex Hesselbo 1937, p. 13). Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 13); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 13). Repulse Bay (Olsen ex Hesselbo 1937, p. 13). *Vansittart Island* (Freuchen ex Hesselbo 1937, p. 13); Danish Island (Freuchen ex Hesselbo 1937, p. 13).
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 236*; Mosquito Bay (Low ex Macoun 1902, p. 199).
9. ISLANDS IN HUDSON, ETC., BAYS: Mansfield (Mansel) Island (Bell ex Macoun and Kindberg 1892, p. 31). *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 417); South Bay, Polunin 1934 and 1936 (F,A,X,B*) 114* 2293a.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 589, Polunin 1936 (F,A,X) 2232a.

51. **Dicranum groenlandicum** Brid., Musc. Recent. Suppl. IV, p. 68 (1819).

D. labradoricum C. Müll.

General Distribution. Circumpolar. Well known from northern and Arctic Europe, Siberia, and Greenland; from Arctic America, where it reaches its northernmost known limit, it extends southwards into the mountains of New England.

E. Arctic Occurrence. This species has been reported several times from the Canadian Eastern Arctic, chiefly from widely separated localities in the southern part of the region, and is well represented in the collections of Polunin.

1. ELLESMERE: *South Coast,* Craig Harbour, Polunin 1934 (B*) 830*; Harbour Fiord (Simmons ex Bryhn 1906, p. 56).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1934 (B*) 741* 794*.
3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*), Polunin 1934 (B*) 669* 695* 696*. *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2562a; Saputit (Mathiassen ex Hesselbo 1937, p. 14).
4. C. BAFFIN: Pangnirtung, Polunin 1934 (B*) 541*.
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 17. *South Coast,* Lake Harbour, Polunin 1934 (B*) 411*; Amadjuak Bay, Soper 1926 (O,A) 893b. Cape Dorset, Soper 1926 (O,A) 664a 668d, Polunin 1934 (B*) 288* 297*.
7. N. LABRADOR: Burwell, Polunin 1934 (B*).
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,X,U) 1476a. Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 236* 2252b.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). "Mansfield Island" (Bell ex Macoun and Kindberg 1892, p. 25). *Southampton Island,* South Bay (Sutton 1930 ex Jennings 1936, p. 8), Polunin 1934 (B*) 114* 126* 165* 166*.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 594c, Polunin 1936 (F,A,X) 2233a.

52. **Dicranum laevidens** R. S. Williams, N. Amer. Fl., XV, p. 126 (1913).

This is another of the puzzling forms concerning which Grout (1937, p. 89) says "To my mind there are too many species of arctic Dicrana recognized in this group." It is related to several other species, especially to *D. angustum* Lindb. This latter, however, does not seem to have been collected yet in North America, in spite of its report by Cardot and Thériot.

General Distribution. A species of Arctic America, known from Yukon, Alaska, Hudson Bay, and Greenland.

E. Arctic Occurrence. This species was known in the Canadian Eastern Arctic only from one published report. One additional specimen has now turned up among the extensive collections made more recently by Dr. Polunin and others.

10. W. Coast Hudson Bay: "Northwest shore of Hudson Bay, lat. 63° 55′ N." (Comer ex Cardot and Thériot 1900, sub nom. *Dicranum angustum;* cf. also Macoun 1902, p. 200); Chesterfield, Polunin 1936 (F,A,X) 2246a.

53. **Dicranum fuscescens** Turn., Musc. Hibern., p. 60, Pl. V (1804).

D. congestum Brid.

An extremely variable species.

General Distribution. A common and widely distributed circumboreal species, occurring through central and northern Europe and Asia; also in Spitsbergen, Greenland (where it reaches its northernmost limit of 83° 06′ N. on the north coast at Low Point), and in northernmost North America from Alaska to Ellesmere and southwards to the United States.

E. Arctic Occurrence. Rather well known from widely separated localities in the Canadian Eastern Arctic. The apparent gaps in its distribution as previously known are very well filled in from the abundant specimens collected by Polunin, Dutilly, and Soper.

1. Ellesmere: *Grant Land,* north shore at 82° 30′ N., Wolf 1906 (N, cf. Williams 1918, p. 211). *Hayes Sound region,* Cape Viele, Eskimopolis, and Fram Harbour (Simmons ex Bryhn 1906, p. 56). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 56).
2. Devon, etc., Islands: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1936 (F,A,X) 2498b.
3. N. Baffin: *Pond Inlet,* Albert Harbour (Freuchen ex Hesselbo 1937, p. 14). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2588a. Cape Griffith (Mathiassen ex Hesselbo 1937, p. 14).
4. C. Baffin: Clyde, Polunin 1936 (F,A,X) 2604a; Cape Adair and Home Bay (Taylor ex Dickie 1869, p. 462); Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 23). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a 2613a.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1233a 1258a 2295a; Cape Dorset, Soper 1926 (O,A) 845, Polunin 1936 (F,A,X) 2381a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 11f 15d.
6. Melville Peninsula: Igloolik (Freuchen ex Hesselbo 1937, p. 14). Pingerqalik (Mathiassen ex Hesselbo 1937, p. 14); Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 14); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 14). Vansittart Island (Freuchen ex Hesselbo 1937, p. 14).
7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1648b.
8. N. Quebec: Diana Bay, Ney and Courtright 1936 (F,A,X) 2407a. Wakeham Bay, Polunin 1936 (F,A,X) 1480b. Wolstenholme, Dutilly 1936 (F,U,A) 791b, Polunin 1936 (F,A,X) 2252.
9. Islands in Hudson, etc., Bays: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 8).
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 595 774.

54. **Dicranum brevifolium** (Lindb.) Lindb., Musc. Scand., p. 24 (1879).

D. muehlenbeckii B.S.G. var. *brevifolium* Lindb.

General Distribution. Northern Europe (Norway and Sweden), Greenland. In North America extending from Alaska and Ellesmere southwards to British Columbia.

E. Arctic Occurrence. Widely distributed in the Canadian Eastern Arctic, although rarely collected.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane (Simmons ex Bryhn 1906, p. 56). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 56).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 (B*) 741*.
4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2611a.
5. S. Baffin: Cape Dorset, Soper 1926 (O,A) 663a.
8. N. Quebec: Digges Island (Bell ex Macoun and Kindberg 1892, p. 30).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203, sub nom. *Dicranum muehlenbeckii* B.S.G.).

55. **Dicranum spadiceum** Zett., Musc. Pyren., p. 30 (1864); K. Sv. Vet.-Akad. Handl., V, p. 20 (1865).

General Distribution. Circumboreal. Central and northern Europe, Caucasus, central to Arctic Asia, Greenland; the American Arctic Archipelago and northernmost Quebec; in western North America from Alaska to the United States (in the Rocky Mountains).

E. Arctic Occurrence.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 15, "var. *obtusum* Bryhn"). *Hayes Sound region,* Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 56). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 56). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 56).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 56).
3. N. Baffin: *Pond Inlet,* Mitimatalik (Mathiassen ex Hesselbo 1937, p. 14).
8. N. Quebec: Mosquito Bay (Low ex Macoun 1902, p. 202).

56. **Dicranum bergeri** Bland., Musci Frond. Exs. No. 114 (1805); Bot. Zeit. Regensb., V, p. 52 (1806).

D. schraderi Web. & Mohr

General Distribution. Circumboreal. Widely distributed through the mountains of Europe; also in the Himalayas, Siberia, and Greenland. In North America extending from Ellesmere westwards to Alaska and south into the northern United States.

E. Arctic Occurrence. Rare in the Canadian Eastern Arctic, being apparently unrepresented in the collections of Polunin, Dutilly, and Soper.

1. Ellesmere: *South Coast,* Fram and Harbour Fiords (Simmons ex Bryhn 1906, p. 55).
8. N. Quebec: Mosquito Bay (Low ex Macoun 1902, p. 201).

(? Islands in Hudson, etc., Bays: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46).)

57. **Dicranum bonjeanii** De Not., in Lisa, Elenco dei Muschi, p. 29 (1837).

General Distribution. Circumboreal. Central and northern Europe, Caucasus and Siberia, Himalayas, Iceland, Greenland; widely distributed in North America, coming south into the United States.

E. Arctic Occurrence. Known previously in the Canadian Eastern Arctic only from the locality at which it reaches its northernmost limit, viz., the north shore of Grant Land.

1. Ellesmere: *Grant Land,* north shore at 82° 30′ N., Wolf 1906 (N, cf. Williams 1918, p. 211).
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1170a.

7. N. LABRADOR: Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. QUEBEC: Diana Bay, Ney and Courtright 1936 (F,A,X) 2407. Wakeham Bay, Polunin 1936 (F,A,X). Wolstenholme, Polunin 1936 (F,A,X) 2252a.

58. **Dicranum scoparium** Hedw., Sp. Musc. Frond., p. 126 (1801).

This species is exceedingly variable in almost every character, so that many forms and varieties have been described. However, plants of several "varieties" or forms may be found in the same tuft!

General Distribution. Circumboreal. Very common and almost universal in the temperate and subarctic zones of the Northern Hemisphere; in North America almost throughout the United States and Canada, but represented by much-reduced and very puzzling forms at higher latitudes.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic only from the rather old and doubtful record in Hooker's report on the botanical material gathered during Parry's Second Expedition.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2498a.
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2563a.
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613a.
6. MELVILLE PENINSULA: Barrow River (Parry ex Hooker 1825a, p. 416).
7. N. LABRADOR: Burwell, Dutilly 1936 (F,U,A) 1718b; bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2233a.

59. [1]**Dicranum flagellare** Hedw., Sp. Musc. Frond., p. 130 (1801).

D. miquelonense Ren. & Card.

General Distribution. Circumboreal? Europe and Asia; in America, from British Columbia eastwards to northern Labrador, thence extending south to the Carolinas and Montana.

E. Arctic Occurrence. Not previously reported from our area, but recently identified by Mr. W. R. Sherrin, A.L.S., of the British Museum, in my collections made in 1931 in the extreme southeast corner (N.P.).[1]

7. N. LABRADOR: Burwell, Polunin 1931 (B* as *"Dicranum miquelonense" scr.* Sherrin).

ENCALYPTACEAE

60. **Encalypta alpina** Smith, Engl. Bot., p. 20, Pl. 1419 (1805).

E. commutata N.H.S.

General Distribution. Circumboreal. A species of the high Alps of central Europe, northern Scandinavia, central and northern Asia, Spitsbergen, Greenland, and Arctic America.

E. Arctic Occurrence. Reported from about seventeen localities in the northernmost parts of the Canadian Eastern Arctic.

1. ELLESMERE: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 16). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Lastraea Valley, Twin Glacier Valley, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 67, "Ofte med Frugt"). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 67). *West Coast,* Lands End, Reindeer Cove, Excrementbugten, and 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 67).

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[1] It is I who have taken the liberty of, and must bear responsibility for, including this species in the present report. (N.P.)

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 67). Devils Isle (Simmons ex Bryhn 1906, p. 67).
6. Melville Peninsula: Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 14).

61. **Encalypta ciliata** Hedw., Sp. Musc. Frond., p. 61 (1801).

General Distribution. Circumboreal. Throughout Europe, Asia, and North Africa; in northern North America ranging south into the United States.

E. Arctic Occurrence. Reported in the Canadian Eastern Arctic only from one collection. The identification is probably open to suspicion, as the species has not turned up since in other and much larger collections.

(? C. Baffin: "Cape Adair and Cape Searle" (Taylor ex Dickie 1869, p. 463).)

62. **Encalypta vulgaris** Hedw., Sp. Musc. Frond., p. 60 (1801).

General Distribution. Widely distributed through Europe and Asia; also in northern Africa and North America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from one previous report and the following unrecorded specimen.

1. Ellesmere: Goose Fiord (Simmons ex Bryhn 1906, p. 68).
3. N. Baffin: Pond Inlet, Bazin 1934 (M*).

63. **Encalypta rhabdocarpa** Schwaegr., Suppl. I, 1, p. 56, Pl. XVI (1811).

General Distribution. Circumboreal. West, central, and northern Europe; Caucasus; central, north, and eastern Asia; Spitsbergen; Greenland; Arctic America (where it reaches its northernmost limit at Mushroom Point, 82° 29′ N. on the north coast of Ellesmere—*See* below).

E. Arctic Occurrence. This appears to be the most common species of *Encalypta* in the Canadian Eastern Arctic, having been collected many times.

1. Ellesmere: *Grant Land,* Mushroom Point and Floeberg Beach (Feilden ex Mitten 1878, p. 316); Wrangel Bay (Wolf ex Bryhn 1908, p. 16). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Lastraea Valley, and Fram Harbour (Simmons ex Bryhn 1906, p. 68). *South Coast,* Fram, Harbour, South Cape, and Musk-ox Fiords (Simmons ex Bryhn 1906, p. 68). *West Coast,* Excrementbugten (Simmons ex Bryhn 1906, p. 68).
2. Devon, etc., Islands: 'Havhestberget' and Castle Island (Simmons ex Bryhn 1906, p. 68); Wellington Channel and Beechey Island (Lyall ex Hooker 1857, p. 119).
4. C. Baffin: Cumberland Sound (Taylor ex Dickie 1869, p. 463).
5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14 *c.fr.* Lake Harbour, Polunin 1936 (F,A,X) 1170a 2295a.
7. N. Labrador: Burwell, Polunin 1934 (B*) 905*.
9. Islands in Hudson, etc., Bays: *Southampton Island,* White Island (Mathiassen ex Hesselbo 1937, p. 14); South Bay, Polunin 1936 (F,A,X) 2293a *c.fr.*
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 494c.

64. **Encalypta affinis** Hedw. fil., in Web. & Mohr, Beitr. z. Naturk. I, p. 121, Pl. IV (1805).

E. apophysata N.H.S.

General Distribution. A circumboreal alpine and high alpine species. West, central, and northern Europe; Caucasus; Siberia; northern North America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from a few reports, but from widely separated localities.

1. Ellesmere: *South Coast,* Harbour Fiord *c.fr.,* and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 68). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 68).
2. Devon, etc., Islands: Somerset Island (Ross ex Hooker 1826, p. 130).
6. Melville Peninsula: South shore of Fury and Hecla Strait, and Igloolik (Parry ex Hooker 1825a, p. 417).

65. **Encalypta streptocarpa** Hedw., Sp. Musc. Frond., p. 62, Pl. X (1801).

E. contorta (Wulf.) Lindb.

General Distribution. Throughout Europe and Asia; northern North America southwards into the United States.

E. Arctic Occurrence. Previously reported from the Canadian Eastern Arctic only in the collections of the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 68). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 68).
2. Devon, etc., Islands: 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 68).
3. N. Baffin: Strathcona Sound, Soper 1923 (O,A) 380.

66. **Encalypta procera** Bruch, Denkschr. Akad. Münch., p. 283, Pl. XI (1828).

General Distribution. A circumboreal species of the arctic and subarctic zones, known particularly from Arctic Europe and Asia, Spitsbergen, Jan Mayen, and Greenland; from Arctic America ranging south to the northernmost United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the report of the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane (Simmons ex Bryhn 1906, p. 69). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 69).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 69).

Pottiaceae

67. **Molendoa tenuinervis** Limpr., Laubm. I, p. 250 (1886).

Gymnostomun laeve Bryhn

Györffy (1912) has presented rather conclusive evidence that the moss for which Bryhn (1906, p. 53) proposed the name "*Gymnostomum laeve*" belongs here, and thus represents the first report of *Molendoa tenuinervis* from North America.

General Distribution. In the mountains of central and eastern Europe, rare; Arctic America.

E. Arctic Occurrence. See above.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1906, p. 53). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 53). *West Coast,* Excrementbugten (Simmons ex Bryhn 1906, p. 53).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 53).

68. **Gymnostomum rupestre** Schleich., in Schwaegr., Suppl. I, 1, p. 31 (1811).

General Distribution. Throughout Europe and Asia; Atlantic Islands; Philippine Islands; northern North America ranging south into the United States.

E. Arctic Occurrence. Reported only once from the Canadian Eastern Arctic, from two localities in the same general region.

1. Ellesmere: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 52).

69. **Hymenostylium recurvirostrum** (Hedw.) Dixon, Rev. Bryol., n.s. VI, p. 96 (1934).

H. curvirostre Lindb.

Weissia curvirostra Hedw.

General Distribution. Circumpolar. Throughout the mountains of Europe and Asia; Spitsbergen, Greenland; northern North America southwards into the United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic since the time of Sir W. E. Parry, but apparently far from common.

1. Ellesmere: *Hayes Sound region,* Fort Juliane, Lastraea Valley, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 53). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 53).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 53).
9. Islands in Hudson, etc., Bays: *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 417).

70. **Tortella tortuosa** (Hedw.) Limpr., Laubm. I, p. 604 (1888).

Trichostomum tortuosum Dixon

General Distribution. Throughout temperate and boreal Europe and Asia; northern Africa; northernmost America and southwards into the United States.

E. Arctic Occurrence. Reported from widely separated localities in the Canadian Eastern Arctic, the earlier records being very well substantiated by the numerous recent collections of Polunin, Potter, and others.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, and Lastraea Valley (Simmons ex Bryhn 1906, p. 62). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 62). *West Coast,* Lands End, Reindeer Cove, and Excrementbugten (Simmons ex Bryhn, p. 62).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 62).
3. N. Baffin: Pond Inlet, Dutilly 1936 (F,U,A) 1192. Arctic Bay, Polunin 1936 (F,A,X) 2590b.
4. C. Baffin: Clyde, Polunin 1934 and 1936 (F,A,X,B*) 617* 2604a.
5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A). *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 409* 2295a.
6. Melville Peninsula: Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 14). Vansittart Island (Freuchen ex Hesselbo 1937, p. 14).
7. N. Labrador: Lady Job Harbour, Potter 1937 (Z,A) 13.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* White Island (Mathiassen ex Hesselbo 1937, p. 14); South Bay, Polunin 1936 (F,A,X) 2294a.

71. **Tortella fragilis** (Drumm.) Limpr., Laubm. I, p. 606 (1888).

Barbula fragilis B.S.G.

Dixon (1924, pp. 245-6) says "I have . . . received specimens from two or three localities in Labrador showing a distinct approach to *Tr. tortuosum;* the leaves on some of the plants, and even the lower leaves on some stems in which the upper ones are quite typical, being strongly contorted when dry, crisped and undulate at the margin, and when moist slightly flexuose and undulate; hardly, indeed, to be recognized from the var. *fragilifolium* of *Tr. tortuosum* except by the leaves [being] somewhat firmer, the very shining nerve and the presence (usually) of some rigid and less curved leaves." This puzzling situation that Mr. Dixon has so ably elucidated is to be found also in the specimens from Baffin Island.

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Jan Mayen, Greenland (where it reaches its northernmost known limit at Lemming Fiord, lat. 82° 53′ N. on the north coast); northernmost America and south to the northern United States.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic from several reports, which are well supplemented by the collections of Polunin. The species is now known from six of the ten major divisions of the region.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 62). *South Coast,* Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 62).
2. DEVON, ETC., ISLANDS: Philpots Island (Philpotts ex Dickie 1871, p. 33).
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 678*. Arctic Bay, Polunin 1936 (F,A,X) 2554b, 2576a.
4. C. BAFFIN: Cumberland Sound (Taylor ex Dickie 1869, p. 463).
5. SOUTH BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a; between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2293a.

72. **Didymodon recurvirostris** (Hedw.) Jenn., Man. Mosses W. Pa., p. 97 (1913).

D. rubellus B.S.G.

Barbula rubella Mitt.

General Distribution. Throughout Europe and Asia; Iceland, Spitsbergen, Jan Mayen, Greenland, North Africa; Tasmania and New Zealand; northern North America and southwards into the United States, common.

E. Arctic Occurrence. This species has already been recorded from many localities in the Canadian Eastern Arctic, the reports often calling attention to its abundance. Bryhn, on the basis of the specimens collected by Simmons during the Second *Fram* Expedition, says (1906, p. 61) "One of the most common mosses in this region and brought back in more or less numerous specimens from every locality investigated" (*transl.*).

1. ELLESMERE: *Grant Land,* Floeberg Beach (Feilden ex Mitten 1878, pp. 315-6); Lincoln Bay and Wrangel Bay (Wolf ex Bryhn 1908, p. 15); Fort Conger (Peary ex Bryhn 1908, p. 15). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim

Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 61). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 61). *West Coast,* Reindeer Cove, 'Isachsens Fiord', and Excrementbugten (Simmons ex Bryhn 1906, p. 61).

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 61). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 61); Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
3. N. Baffin: *Bylot Island,* Tuarpat (Freuchen ex Hesselbo 1937, p. 14). Pond Inlet, Polunin (B*) 678*. *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b; Arctic Bay, Polunin 1936 (F,A,X) 2590b *c.fr.*
5. S. Baffin: Point Brewster, Potter 1937 (Z,A) 17, *c.fr.* Cape Dorset, Polunin 1934 (B*) 313*.
7. N. Labrador: Bowdoin Harbour, Potter 1937 (Z,A) 11 *c.fr.*; bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10 *c.fr.*

73. **Didymodon alpigenus** (Vent.) Vent., Rev. Bryol., VI, p. 53 (1879).

General Distribution. Mountains of central Europe; Norway, Kashmir, Arctic Asia, Arctic America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the reports by Bryhn.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 15). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, and Fram Harbour (Simmons ex Bryhn 1906, p. 61). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 61).

74. **Didymodon rufus** Lorentz, in Rabenh., Bryoth. Eur. No. 621 (c. diagn.) (1863).

General Distribution. In Europe only in the high Alps and northern Norway; central Asia, Siberia, Novaya Zemlya; Arctic America.

E. Arctic Occurrence. In our area known only from the collections made by Simmons during the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1906, p. 62). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 62).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 62).

Barbula icmadophila B.S.G., Bry. Eur. fasc. 43, suppl. 2 (1850).

Although this species is widespread in Europe and Asia, I have seen no authentic material from any part of North America. Mitten (1878, p. 315) reports it as collected in two localities in northernmost Ellesmere (Mushroom Point, lat. 82° 29′ 12″ N., and Floeberg Beach, lat. 82° 27′ N.) by Captain Feilden during the English *Alert* and *Discovery* Expedition of 1875-6. I have not seen the specimens, as they are not in Mitten's Herbarium, which has been incorporated into that of the New York Botanical Garden, and so am unable to express a definite opinion. However, Mitten describes the material as "A few small barren stems", so the suggestion is that he was dealing with the reduced arctic form of some other species.[1]

75. **Barbula rigidula** (Hedw.) Milde, Bryol. Siles., p. 118 (1869).

Trichostomum rigidulum B.S.G.

General Distribution. Circumboreal. Europe, Caucasus, Siberia; in northern North America ranging from the Arctic Archipelago southwards into the United States.

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[1] In the British Museum are a few scraps from "Scoresby Bay", collected during the *Alert* and *Discovery* Expedition by H. C. Hart and determined by William Mitten as "*Tortula icmadophila*". Messrs. H. N. Dixon and W. R. Sherrin have been kind enough to examine them for me and have pronounced them to be correctly determined, but unfortunately it is too late in this work to insert the species among those that are confirmed as occurring in our area. (N.P.)

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the reports of Hooker cited below. I have seen the Beechey Island material in the Herbarium of the New York Botanical Garden, but cannot be quite sure of the identification (which was made by Mitten) because the specimens are so poorly developed.

2. DEVON, ETC., ISLANDS: Beechey Island, Lyall 1852-4 (N, cf. Hooker 1857, p. 119).
3. N. BAFFIN: Navy Board Inlet (Lyall ex Hooker 1857, p. 119).

Barbula vinealis Brid., Bryol. Univ. I, p. 830 (1826).

Harmsen and Seidenfaden (1932, p. 25) tentatively report this species, giving the following remarks "A *Barbula* found in Craig Harbour (Ellesmere Island) is possibly referable to this species. The poor state of the material, however, does not allow of a definite determination." Such caution is well justified, particularly as no species of *Barbula* has yet been identified with absolute certainty from the Canadian Eastern Arctic. Perhaps the present plant is *B. rigidula,* of whose occurrence in the north of our area there is very little doubt.[1]

76. **Pottia heimii** (Hedw.) B.S.G., Bry. Eur. fasc. 18-20, p. 12, Pl. CXXIV (1843).

var. **obtusifolia** (R. Br.) Hagen, Musc. Norv. Bor., p. 45 (1899).

General Distribution. Circumpolar. Europe, Siberia, Spitsbergen, Jan Mayen, Greenland; in northern North America ranging from Alaska to Ellesmere and south into the northernmost United States.

E. Arctic Occurrence. Widespread through the northernmost parts of our area, but apparently not represented in the recent collections of Polunin, Soper, Dutilly, and others.

1. ELLESMERE: *Grant Land,* Floeberg Beach *c.fr.* (Feilden ex Mitten 1878, p. 314, sub nom. *P. heimii*). *South Coast,* Craig Harbour *c.fr.* (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 24, sub nom. *Pottia papillosa—See* below); Musk-ox and Goose Fiords (Simmons ex Bryhn 1906, p. 60).
2. DEVON, ETC., ISLANDS: Devils Isle and Castle Island (Simmons ex Bryhn 1906, p. 60); Beechey Island *c.fr.* (Lyall ex Hooker 1857, p. 119, sub nom. *P. heimii*).

Pottia papillosa Harmsen, in Harmsen & Seidenfaden, Medd. om Grønland, LXXXII, 2, p. 24 (1932).

Of this moss (which was collected in 1928 by Seidenfaden at Craig Harbour, Ellesmere Island), the author says "The species seems to be closely related to *Pottia Heimii,* but differs from this species by the shape of the papillæ; the leaves, too, are broader and only slightly serrate at the apex owing to projecting cells; further the shape of the capsule differs from that of *P. Heimii,* more especially the operculum, which is not furnished with a lip and is partially adherent to the edge of the capsule."

Harmsen's species is without doubt a variety of *P. heimii,* and, although I have not seen the type material, it seems to me that the description and figure match material of the exceedingly variable arctic forms of this species very closely. Accordingly, I did not long hesitate in placing *P. papillosa* into synonymy under *P. heimii* var. *obtusifolia* (*P. heimii* var. *arctica* Lindb.). Dixon (1922, p. 92) has reported on an extremely interesting form of this variable species, collected at Ata, West Greenland, by Professor A. C. Seward. Dixon's remarks so closely parallel those of Harmsen (*l.c.*) that I shall quote them at some length.

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[1] *Barbula fallax* Hedw. has also been reported as once collected in our area—on "Chidley Peninsula, lat. 60°-60° 30′ N." by Sir William MacGregor, cf. footnote on p. 374. (N.P.)

"The habit . . . [was] characteristic of *P. Heimii* Fuernr., but the leaves were nearly entire, obtuse, with the margin frequently recurved, the capsules very short and wide, the lid remarkably short, only very slightly rostellate, and frequently simply apiculate, and the capsules being then only just mature there was no indication of systyly. (After lying in the herbarium, however, for some months, the capsules have contracted in width and become more elongated, while the lid had become detached at the rim and shows constant systyly.) It became clear that the moss was a form of *P. heimii,* and the question arose to which of the numerous varieties of that species it should be referred . . . The ultimate conclusion at which . . . I arrived was that it could not be placed under any known variety. Not that it did not possess the characters of any, but rather that it assumed the characters of all! Moreover, it quite declined to submit to any cut and dried rules of morphology even for its own characters; the leaf margins were sometimes erect, sometimes recurved; usually entire or nearly so, but here and there subdenticulate, and generally showing some signs pointing that way. The apex was mostly very obtuse, but here and there tapering, the cell structure equally variable, often showing distinct traces of a border, but very frequently (on the same stem) without any; in fact the plant showed in all directions a callous disregard for the convenience of taxonomists. On the whole it appears better to consider the Ata plant as a remarkable form of *P. Heimii* with a considerable approach to var. *obtusifolia* (R. Br.) Hag."

With this conclusion of Mr. Dixon I am in complete accordance.

77. **Stegonia latifolia** (Schwaegr.) Vent., Rev. Bryol., X, p. 96 (1883).

Anacalypta latifolia Fürn.

Pottia latifolia C. Müll.

General Distribution. Circumboreal, limited to the higher altitudes and latitudes. Europe, Caucasus, central Asia, Siberia; northern North America including the Arctic Archipelago, Newfoundland, and Greenland (where it reaches its northern limit at Centrum Island, lat. 82° 44′ N. on the north coast).

E. Arctic Occurrence. Reported previously from several widely separated localities in the Canadian Eastern Arctic, but not re-collected there by Polunin, Soper, Dutilly, or any other recent explorer.

1. ELLESMERE: *South Coast,* Harbour and Goose Fiords *c.fr.* (Simmons ex Bryhn 1906, p. 60).
4. C. BAFFIN: Scott Bay (Taylor ex Dickie 1869, p. 463). Cumberland Sound (Taylor ex Dickie 1869, p. 463).

var. **pilifera** (Brid.) Broth., Laubm. Fennosk., p. 145 (1923).

General Distribution. As that of the species.

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord and 'Hovedarten' (Simmons ex Bryhn 1906, p. 60).

78. **Desmatodon systylius** B.S.G., Bry. Eur. fasc. 18-20, Suppl. 1, Pl. CXXXI (1843).

General Distribution. Circumboreal. Northern Scandinavia; high mountains of Europe and Asia; Siberia, Spitsbergen, Greenland; in northern North America it reaches its northernmost known limit, extending southwards in the western mountains to California.

E. Arctic Occurrence. Long known from several localities in the Canadian Eastern Arctic, though apparently missed by Polunin, Soper, Dutilly, and other recent collectors.

1. ELLESMERE: *Hayes Sound region,* Fram Harbour (Simmons ex Bryhn 1906, p. 61). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 61).
4. C. BAFFIN: Cape Adair and Cape Searle (Taylor ex Dickie 1869, p. 463). Cumberland Sound and Kingnite (Taylor ex Dickie 1869, p. 463).

79. **Desmatodon latifolius** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 86 (1819).

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Spitsbergen, where it has its northernmost known limit; Greenland; in northern North America extending from Labrador to Alaska and south in the mountains to California and New Mexico.

E. Arctic Occurrence. The following specimen collected by Polunin in 1936 seems to be the first representative of the typical form from our area, although var. *muticus* Brid. had already been reported from farther north by Bryhn.

7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1114a.

var. **muticus** (Brid.) Brid., Bryol. Univ. I, p. 525 (1826).

General Distribution. Much the same as that of the typical form, except that it extends farther north and tends to be more restricted to the south.

E. Arctic Occurrence.

1. ELLESMERE: Goose Fiord (Simmons ex Bryhn 1906, p. 61).
2. DEVON, ETC., ISLANDS: Castle Island (Simmons ex Bryhn 1906, p. 61).

80. **Desmatodon suberectus** (Hook.) Limpr., Laubm. Fl. I, p. 651 (1888).

D. obliquus B.S.G.

Tortula leucostoma (R. Br.) Hook. and Grev.[1]

General Distribution. Circumboreal. Scandinavia and the Alps, Novaya Zemlya, central Asia, Siberia, Spitsbergen, Greenland; Arctic America, southwards in the Canadian Rockies.

E. Arctic Occurrence. There are in the literature several reports of this species from the northernmost parts of the Canadian Eastern Arctic, and although it has not turned up in recent collections, these early records have been confirmed by Williams (1919, pp. 210-1) who studied the specimens during his revision of the genus.

1. ELLESMERE: *North Coast,* Mushroom Point *c.fr.* (Feilden ex Mitten 1878, p. 315). *Grinnell Land,* St. Patrick Bay (Hart ex Mitten 1878, p. 318).

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[1] A fuller account of the problems presented by this name has been published by Steere (cf. 1940, pp. 76-9) —October 1946.

Hayes Sound region, Lastraea Valley and Twin Glacier Valley (Simmons ex Bryhn 1906, p. 60). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 60).

2. DEVON, ETC., ISLANDS: Devils Isle (Simmons ex Bryhn 1906, p. 60); Beechey Island (Lyall ex Hooker 1857, p. 119).

81. **Desmatodon laureri** (Schultz) B.S.G., Bry. Eur. fasc. 18-20, p. 9, Pl. CXXXV (1843).

General Distribution. Circumboreal. Norway, alpine Europe; central Asia; Greenland, Spitsbergen (where it reaches its northernmost known limit); Arctic America, extending south in the Rocky Mountains to Colorado.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the collections made during the Second *Fram* Expedition by Simmons, some of them with fruit.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord (Simmons ex Bryhn 1906, p. 61). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 61).

82. **Aloina rigida** (Hedw.) Limpr., Laubm. I, p. 637 (1888).

General Distribution. Widespread in the temperate parts of the Northern Hemisphere. Throughout Europe; western and central Asia; northern Africa; northern North America (principally in the western mountains).

E. Arctic Occurrence. Bryhn's report of this species from the Canadian Eastern Arctic is the only one from the region, or from any Arctic region, for that matter. He says (1906, p. 62) of Simmons's specimens "Extremely rare and collected exceedingly sparingly. Specimens were found only at Musk-ox Fiord in King Oscar Land, lat. 76° 30′ N., on clayey soil. A few individual plants were found here among other mosses. Not previously reported for the Arctic Zone" (*transl.*). This moss is so characteristic and unmistakable that I am inclined to accept Bryhn's identification, even though it entails such a remarkable range extension.

(? ELLESMERE: Musk-ox Fiord (Simmons ex Bryhn 1906, p. 62).)

Tortula muralis Hedw., Sp. Musc. Frond., p. 123 (1801).

This species is common in west, central, and southern Europe. In North America it occurs chiefly in the southern and southwestern United States. Quite recently it was reported from the northern part of the Canadian Eastern Arctic—by Harmsen and Seidenfaden (1932, p. 25) from a specimen collected in 1928 at Craig Harbour, Ellesmere Island. They say "The species is of rare occurrence within the Arctic region. It is recorded from two places in Iceland, but not from the Arctic portions of Europe and America. Thus it is new to the Arctic American Archipelago." I do not see how this report of a species characteristic of central and southern Europe and temperate North America can be other than an error of identification. If the identification is correct (the specimens are reported as bearing sporophytes), then this collection represents not only a tremendous extension of geographic range but also a very curious mixture of floristic elements. I suspect very strongly that the following species is the one that was actually collected, or perhaps some species of *Desmatodon.*

83. **Tortula mucronifolia** Schwaegr., Suppl. I, 1, p. 136, Pl. XXXIV (1811).

General Distribution. Throughout the mountains of Europe and Asia; Siberia, Spitsbergen (where it reaches its northernmost limit), Greenland; northern North America southwards into the United States.

E. Arctic Occurrence. Reported several times from the Canadian Eastern Arctic, but not represented in the collections of Polunin, Soper, Dutilly, and other recent explorers.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, and Fram Harbour (Simmons ex Bryhn 1906, p. 63). *South Coast,* Harbour, Musk-ox, and Goose Fiords, Vendomkap (Simmons ex Bryhn 1906, p. 63). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 63).
2. DEVON, ETC., ISLANDS: Devils Isle (Simmons ex Bryhn 1906, p. 63).

84. **Tortula norvegica** (Web. fil.) Lindb., Öfv. K. Vet.-Akad. Förh., Stockholm, XX, p. 387 (1863).

T. aciphylla (B.S.G.) Hartm.

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Siberia, Greenland, northern North America.

E. Arctic Occurrence. Reported previously from several localities in the Canadian Eastern Arctic, and now recorded from several more.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 16). *South Coast,* Musk-ox and Goose Fiords (Simmons ex Bryhn 1906, p. 63).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2523a.
7. N. LABRADOR: Burwell, Polunin 1934 and 1936 (F,A,X,B*) 909* 1082a.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

85. **Tortula ruralis** (Hedw.) Smith, Fl. Brit. III, p. 1254 (1804).

General Distribution. Common and widespread throughout Europe and Asia; northern Africa, Spitsbergen, Greenland (where it reaches its northern limit of distribution at Low Point, lat. 83°06′ N. on the north coast), Magellan Straits; Arctic America and southwards into the United States, particularly in the west.

E. Arctic Occurrence. Abundant in the Canadian Eastern Arctic, where it has long been known from many localities. The reports in the literature are well supplemented by the collections of Dr. Polunin and others. The frequency of the species in the northernmost part of the region is well emphasized by Bryhn (1906, p. 63), who says "This species is one of the most common mosses of the region and it was collected in every one of the localities investigated" (*transl.*).

1. ELLESMERE: *Grant Land,* Mushroom Point (Feilden ex Mitten 1878, p. 315); Wrangel Bay (Wolf ex Bryhn 1908, p. 16). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 63). *South Coast,* Fram Fiord (Simmons ex Bryhn 1906, p. 63); Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 841* 845* 2475a; Harbour, South Cape, Musk-ox, and Goose Fiords, Vendomkap (Simmons ex Bryhn 1906, p.63. *West Coast,* Reindeer Cove, 'Isachsens Fiord', Excrementbugten (Simmons ex Bryhn 1906, p. 63).

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 63). *Devon Island,* Dundas Harbour, Soper 1923 (O,A) 291 294, Polunin 1936 (F,A,X) 2501a 2523a; Beechey Island, and between Beechey Island and Northumberland Sound (Lyall ex Hooker 1857, p. 119).
3. N. Baffin: *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2589a; Saputit (Mathiassen ex Hesselbo 1937, p. 14); 'Little Fiord' and 'Ugluluarsuit' (Freuchen ex Hesselbo 1937, p. 14).
4. C. Baffin: *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613a.
5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 334* 2295a 2309a; Cape Dorset, Soper 1926 (O,A) 676c. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 15b.
6. Melville Peninsula: Neerlo Nakto (Parry ex Hooker 1825a, p. 418). *East Coast,* Pingerqalik and Ugli Island (Mathiassen ex Hesselbo 1937, p. 14). *Vansittart Island* (Freuchen ex Hesselbo 1937, p. 14); Danish Island (Freuchen ex Hesselbo 1937, p. 14).
7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1637a 1645a, Polunin 1936 (F,A,X) 1114a; Bowdoin Harbour, Potter 1937 (Z,A) 12.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* White Island (Mathiassen ex Hesselbo 1937, p. 14).

Grimmiaceae

86. **Grimmia commutata** Hüben., Musc. Germ., p. 185 (1833).

G. ovata Web. & Mohr

General Distribution. Circumboreal. Throughout Europe and Asia; northern Africa; Greenland; northern North America, extending southwards into the United States.

E. Arctic Occurrence. Known previously in the Canadian Eastern Arctic only from the report of the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* Bedford Pim Island and Fram Harbour (Simmons ex Bryhn 1906, p. 65). *South Coast,* Harbour Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 65).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2293a *c.fr.*

87. **Grimmia elongata** Kaulf., in Sturm, Deutschl. Fl. II, p. 14 (1815).

General Distribution. Alpine and Arctic Europe; Caucasus, Sikkim, Ural Mountains; Greenland; Arctic America.

E. Arctic Occurrence. Reported from few but widely distributed localities in our area.

1. Ellesmere: Beitstad Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 65).
2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. Baffin: Cumberland Sound (Taylor ex Dickie 1869, p. 463).

88. **Grimmia ovalis** (Hedw.) Lindb., Acta Soc. Sci. Fenn., X, p. 75 (1871).

General Distribution. Circumboreal. A common species of Europe and Asia; Greenland; in northern North America extending from the Yukon eastwards to Baffin Island and southwards to New York and New Mexico.

E. Arctic Occurrence. This is the first report of the species from our area.

4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2611a *c.fr.*

Grimmia apiculata Hornsch. in Hoppe & Hornsch., Pl. Select. Cent. II, Dec. 5, 1818; Flora, I, p. 85 (1819).

This species is well known in the high Alps of Europe and in Arctic Scandinavia, but has never been reported from the North American Continent. However, it was long ago identified by Dickie (1869, p. 463) among the collections of Taylor from Cape Adair and Cape Searle in Baffin Island. I have not seen this material, but have very strong doubts as to the correctness of the determination. There is, of course, some chance that the species does exist in Arctic America; but as no further specimens have been reported in the last 75 years it ought to be removed at least temporarily from our list.

89. **Grimmia trichophylla** Grev., Fl. Edinb., p. 235 (1824).

General Distribution. Europe, Asia Minor, northern Africa, Madeira, Australasia; in North America from Alaska to Colorado and California; unconfirmed in the Canadian Eastern Arctic.

E. Arctic Occurrence. This species has been reported only once from the southernmost part of our area—on the authority of Kindberg, whose determinations are not always reliable. However, as the species is a well-known, common and variable moss of the northern parts of the North American mainland, and the locality from which it was reported is only low-arctic, the identification is here accepted tentatively, with a query. Even if it is incorrect, the species will almost certainly be found eventually within the region.

(? ISLANDS IN HUDSON, ETC., BAYS: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46).)

90. **Grimmia pulvinata** (Hedw.) Smith, Engl. Bot., Pl. 1728 (1807).

General Distribution. Nearly circumboreal. Not uncommon in Europe and Asia; northern Africa, Azores, Australasia, Greenland; northern North America, extending southwards in the western mountains to Arizona.

E. Arctic Occurrence. Long ago reported from our area, but apparently not collected there since. However, as the species is not uncommon on the northern mainland of North America, and fruits abundantly there, Dickie's identification, although not beyond question, is not too improbable.

(? C. BAFFIN: *Cumberland Sound,* Kingnait (Taylor ex Dickie 1869, p. 463).)

91. **Grimmia torquata** Hornsch., in Grev., Scot. Crypt. Fl. IV, Pl. CXCIX (1826).

General Distribution. Alpine and Arctic Europe; Greenland; in northern North America extending south in the western mountains to Wyoming and California.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from material collected by Simmons during the Second *Fram* Expedition.

1. ELLESMERE: *Hayes Sound region,* Cape Viele, Lastraea Valley, and Twin Glacier Valley (Simmons ex Bryhn 1906, p. 65).

92. **Grimmia alpicola** Hedw., Sp. Musc. Frond., p. 77, Pl. XV (1801).

General Distribution. Central and northern Europe; Greenland; common and widespread in northern North America from Alaska to Devon Island and south to Labrador and the United States, particularly in the mountains of the west.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic from only a single recent report.

2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2498a.
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 8).

var. **latifolia** (Zett.) Möller, Bot. Not., p. 143 (1907).

G. platyphylla Mitt.

General Distribution. Circumboreal. An "arctic-alpine" variety of central and northern Europe and Asia; Greenland; in North America ranging from Baffin Island and the Canadian Rocky Mountains southwards to Utah.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the type material of *Grimmia platyphylla* Mitt. from "Davis's Straits."

4. C. Baffin: "Davis's Straits" (Taylor ex Mitten 1865, p. 20; the localities include Cape Searle, cf. Dickie 1869, p. 463).

93. **Grimmia conferta** Funck, Moostach., p. 18 (1821).

G. apocarpa Hedw. var. *conferta* Spreng.

Schistidium confertum B.S.G.

General Distribution. Throughout Europe and Asia; northern Africa; Greenland (where it reaches its northern limit at Centrum Island, lat. 82° 44′ N. on the north coast); northern North America, extending southwards in the mountains to California and North Carolina; also in Patagonia.

E. Arctic Occurrence. The species is known in our area only from the report of the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 64).

94. **Grimmia apocarpa** Hedw., Sp. Musc. Frond., p. 76 (1801).

Schistidium apocarpum B.S.G.

General Distribution. Throughout Europe and Asia; north and south Africa; Australia, Spitsbergen, Iceland, Jan Mayen, Greenland (where it reaches its northern limit at I.P. Koch Fiord on the north coast); from Arctic America south into the United States, where it extends to California, Arizona, New Mexico, and Georgia.

E. Arctic Occurrence. Very common and polymorphous in the Canadian Eastern Arctic. Bryhn (1906, p. 64) has proposed several new varieties, but in view of the extreme variability of the species and the multiplicity of forms which it assumes, especially in the Arctic, as nearly every author remarks, these "varieties" will be disregarded.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord, Skräling Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 64). *South Coast,* Fram, Harbour, and South Cape Fiords (Simmons ex Bryhn 1906, p. 64, sub syn. *Schistidium apocarpum* and "varieties"); Craig Harbour, Polunin 1934 (B*) 841*.
2. Devon, etc., Islands: North Kent Island and 'Havhestberget' (Simmons ex Bryhn 1906, p. 64). *Devon Island,* Devils Isle (Simmons ex Bryhn 1906, p. 64); Philpots Island (Philpotts ex Dickie 1871, p. 33); Powell Creek (Lyall ex Hooker 1857, p. 119).
4. C. Baffin: Dickie's somewhat ambiguous report (1869, p. 463) of the species as "frequent on both east and west sides" (of Davis Strait), based on the collections of Taylor, has to be placed here (cf. also Mitten 1865, p. 19).
7. N. Labrador: Burwell, Polunin 1931 (B*).

8. N. QUEBEC: Cape Prince of Wales (Bell ex Macoun and Kindberg 1892, p. 62).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Nottingham Island (Bell 1884, p. 46; cf. Macoun and Kindberg 1892, p. 62). *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2282a 2294a.

95. **Grimmia gracilis** Schleich., in Schwaegr., Suppl. I, 1, p. 98 (1811).

G. apocarpa Hedw. var. *gracilis* Web. & Mohr

General Distribution. Circumboreal. Through Europe and Asia; Spitsbergen; northern North America and southward into the United States, where it reaches Tennessee in the east and Arizona in the west.

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Rutherford, Cocked Hat Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 64, sub nom. *Schistidium gracile*). *South Coast,* Harbour, Musk-ox, and Goose Fiords, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 64, as *Schistidium gracile*).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 64, sub nom. *Schistidium gracile*). *Devon Island,* Devils Isle (Simmons ex Bryhn 1906, p. 64, sub nom. *Schistidium gracile*); Dundas Harbour, Polunin 1934 (B*) 763*.

96. **Grimmia anodon** B.S.G., Bry. Eur. fasc. 25-8, p. 8, Pl. CCXXXVI (1845).

General Distribution. Through Europe and Asia; northern Africa, Greenland; northern North America and southwards in the Rocky Mountains to Arizona.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from a single collection made by Simmons during the Second *Fram* Expedition.

1. ELLESMERE: Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 65).

97. **Grimmia plagiopodia** Hedw., Sp. Musc. Frond., p. 78, Pl. XV (1801).

General Distribution. Almost throughout Europe; Caucasus; northern North America south into the United States, particularly in the mountains of the west.

E. Arctic Occurrence. Reported in the Canadian Eastern Arctic only from one locality. The identification (by Mr. Sherrin) is nevertheless accepted without question because the species is well known and widely distributed elsewhere in North America.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

Rhacomitrium ellipticum (Turn.) B.S.G., Bry. Eur. fasc. 25-8, p. 5, fig. 24 (1845).

This is a typically Atlantic plant, widespread although rare on the islands lying off the west coast of Europe, including the British Isles and the Faeroes. Consequently, although Hooker must have been familiar with the species, his report (1825a, p. 416, sub nom. *Trichostomum ellipticum* Hook. & Tayl.) of it from the "South shore of the strait of the Fury and Hecla" is almost without doubt the result of an error in identification. Until this species has been reported more authoritatively from the New World, it must be omitted from our list.

98. **Rhacomitrium aciculare** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 80 (1819).

General Distribution. Nearly circumboreal. Through the mountains of Europe; Atlantic Islands; in North America from Baffin and Labrador across the continent to Alaska and southwards into the United States, where it reaches the mountains of California and Alabama.

E. Arctic Occurrence. Known in our area only from a single report of "var. *denticulatum* B.S.G."

4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 26, "var. *denticulatum*").

99. **Rhacomitrium depressum** Lesq., Mem. Calif. Acad. Sci., I, p. 14 (1868).

General Distribution. Only in North America: northern Quebec and the western mountains from British Columbia to California.

E. Arctic Occurrence. This moss is known from only one locality in the Canadian Eastern Arctic. As the species is a typically western one, and the Quebec specimen was named by Kindberg, there is reason to view the identification with suspicion. However, the specimen is apparently confirmed by Jones (1933, p. 53) in his revision of the North American species of *Rhacomitrium,* and so it will be retained for this list.

(? N. Quebec: "On rocks, Mosquito Bay" (Low ex Macoun 1902, p. 225).)

100. **Rhacomitrium sudeticum** (Funck) B.S.G., Bry. Eur. fasc., 25-8, p. 7, Pl. CCLXIV (1845).

General Distribution. Nearly circumboreal. In the mountains of Europe and western Asia; Japan, Iceland, Jan Mayen, Spitsbergen, Greenland; in North America from Alaska to the Arctic Archipelago, extending southward into the United States.

E. Arctic Occurrence. Reported once from the Canadian Eastern Arctic, from the southernmost part of the region. The more recent collections of Polunin and Soper verify the original report and considerably extend the known range.

2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2498a 2501a; Beechey Island, Soper 1923 (O,A) 321 f. *papillosum* C. Jens.
7. N. Labrador: Burwell, Polunin 1931 (B*).
8. N. Quebec: Wolstenholme, Polunin 1934 (B*) 196*.

(? Islands in Hudson, etc., Bays: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46).)

101. **Rhacomitrium brevisetum** Lindb., Acta Soc. Sci. Fenn., X, p. ~~224~~ 244 ~~(1872)~~. 1875

General Distribution. Known only from the type locality in Siberia (Sachalin) and from the material of the Second *Fram* Expedition cited below, which is the only report of the species from the New World, and so ought possibly to be viewed with some suspicion.

E. Arctic Occurrence.

(? Ellesmere: Beitstad Fiord (Simmons ex Bryhn 1906, p. 65).)

102. **Rhacomitrium fasciculare** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 80 (1819).

General Distribution. Chiefly alpine and subarctic. Through the mountains of Europe; Spitsbergen, Greenland; in northern North America from Alaska to Labrador, south in the mountains to the northern United States.

E. Arctic Occurrence. So far reported only from the southernmost part of the Canadian Eastern Arctic. Although Bell's specimens were probably named by Kindberg, who was notorious for his unreliable identifications, the species is widespread enough in northern North America to make this particular identification quite plausible.[1]

(? ISLANDS IN HUDSON, ETC., BAYS: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46).)

103. **Rhacomitrium heterostichum** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 79 (1819).

General Distribution. An extremely variable species with an almost world-wide distribution, at least in the temperate regions; in North America extending from Alaska to the Arctic Archipelago and south into the United States, especially in the mountains.

E. Arctic Occurrence. Not previously reported from the Canadian Eastern Arctic, although well enough known from the mainland regions to the south.

3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*).
7. N. LABRADOR: Burwell, Polunin 1931 and 1934 (B*) 894*.

104. **Rhacomitrium microcarpum** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 79 (1819).

General Distribution. Through the mountains of Europe; in North America ranging from Alaska to Melville Peninsula and Labrador, south into the United States.

E. Arctic Occurrence. Recorded only once from the Canadian Eastern Arctic, in the report of the Fifth Thule Expedition.

6. MELVILLE PENINSULA: Vansittart Island (Freuchen ex Hesselbo 1937, p. 13).

105. **Rhacomitrium lanuginosum** (Hedw.) Brid., Musc. Recent Suppl. IV, p. 79 (1819).

R. hypnoides Lindb.

General Distribution. A species of high latitudes and high altitudes the world over. Europe, Asia, northern and southern Africa; Atlantic islands, Franz Josef Land, Spitsbergen, Iceland, Greenland (where it reaches lat. 83° 06′ N. on the north coast at Low Point—cf. Hesselbo 1923, p. 275); South America, Pacific Islands, Australasia; in North America ranging from Ellesmere to Alaska and south to the higher mountains of the northernmost United States.

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[1] This species may also be recorded, on the authority of Mr. Sherrin, as occurring at Nullataktok Bay, which lies slightly to the south of our area on the Atlantic coast of Labrador. Here I had the good fortune to find it during the short time ashore on the return voyage from Akpatok Island in 1931. (N.P.)

E. Arctic Occurrence. Reported many times from all parts of the Canadian Eastern Arctic, from nearly every collection made. This species and *Aulacomnium turgidum* must share the distinction of being the most common and widely distributed species in the American Arctic, occurring on nearly all substrata.

1. ELLESMERE: common—numerous records from almost all localities—cf. Mitten (1878, pp. 314-8) and Bryhn (1906, p. 66); also such recent collections as Craig Harbour, Jakeman and Fielder 1923 (O,A), Soper 1923 (O,A) 251 252, Dutilly 1936 (F,U,A) 1230 1234a, Polunin 1934 and 1936 (F,A,X,B*) 830 831 2475a.
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 66). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 66); Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*) 744* 757* 810* 2498a 2501a.
3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*), Polunin 1934 (B*) 668* 690*; Mitimatalik and Albert Harbour (Mathiassen ex Hesselbo 1927, p. 13); 'Igluluarsuit' (Freuchen ex Hesselbo 1937, p. 13). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2563a. 'Little Fiord' and Cape Hallowell (Freuchen ex Hesselbo 1937, p. 13).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 463); Clyde, Polunin 1934 and 1936 (F,A,X,B*) 589* 591* 616* 626* 2591a 2604a. *Cumberland Sound,* Pangnirtung, Soper 1923 and 1924 (O,A) 68 69 70 635, Polunin 1934 and 1936 (B*) incl. 508* 509* 532* 541* 548* 587*; Blacklead Island, Soper (O,A) 299; Kingua Fiord, Soper 1924 (O,A) 123.
5. S. BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* no loc. (Bell ex Macoun 1902, p. 224); Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 404* 410* 411* 441* 1170 1233 2295a; North Bluff (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 76); Amadjuak Bay, Soper 1926 (O,A) 895; between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37); Cape Dorset, Polunin 1934 (B*) 270* 273* 274* 297* 302* 309* 313*. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 11a 15f 16e.
6. MELVILLE PENINSULA: Repulse Bay (Olsen ex Hesselbo 1937, p. 13, sub nom. *R. hypnoides*). Vansittart Island (Freuchen ex Hesselbo 1937, p. 13).
7. N. LABRADOR: "Extreme north-eastern Labrador" (Hantzsch 1909, p. 221); Burwell, Dutilly 1936 (F,U,A) 1715b, Polunin 1931, 1934, and 1936 (B*) incl. 465* 908*; Lady Job Harbour, Potter 1937 (Z,A) 11 12; Bowdoin Harbour, Potter 1937 (Z,A) 12 13.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1471b 1480b. Wolstenholme, Dutilly 1936 (F,U,A) 787b, Polunin 1934 and 1936 (F,A,X,B*) 197* 210* 236* 1259a 2250a 2252a.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Nottingham Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 76). *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 416, sub nom. *Trichostomum lanuginosum*); South Bay, Polunin 1934 and 1936 (F,A,X,B*) 113* 148* 165* 166* 2293b (Sutton ex Jennings 1936, p. 8).
10. W. COAST HUDSON BAY: Wager Inlet (Freuchen ex Hesselbo 1937, p. 13). Chesterfield, Polunin 1936 (F,A,X) 2233c 2241a.

106. **Rhacomitrium canescens** (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 78 (1819).

General Distribution. Circumboreal. Common throughout the mountains of Europe and Asia; Spitsbergen, northern Africa, Greenland (where it reaches its northern limit at Lemming Fiord, lat. 82° 53′ N. on the north coast—cf. Hesselbo 1923, p. 275); common in northern North America from Alaska and the Arctic Archipelago south to Labrador and the northern United States, also reaching California in the western mountains.

E. Arctic Occurrence. Reported from several widely separated localities in our area.

1. ELLESMERE: *Hayes Sound region,* Bedford Pim Island (Simmons ex Bryhn 1906, p. 66, "f. *epilosum*"); Fram Harbour (Simmons ex Bryhn 1906, p. 66, "f. *ericoides*"). *South Coast,* Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 847* 2475a, Dutilly 1936 (F,U,A) 1231b; Goose Fiord (Simmons ex Bryhn 1906, p. 66, incl. "f. *prolixum*").
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 66). *Devon Island,* Dundas Harbour, Polunin 1934 (B*) 748* 763*.
4. C. BAFFIN: Clyde, Dutilly 1936 (F,U,A) 1472. Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 26). *Cumberland Sound,* Pangnirtung, Polunin 1934 (B*) 550*.
5. S. BAFFIN: *West Coast,* Camp Kungovik, Soper 1929 (O,A) 15c.
7. N. LABRADOR: Lady Job Harbour, Potter 1937 (Z,A) 13.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 176*; Digges Island (Bell ex Macoun and Kindberg 1892, p. 77).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

FUNARIACEAE

107. **Funaria muehlenbergii** Turn., König Sims Ann. Bot., II, p. 198 (1806).

F. calcarea Wahlenb.

General Distribution. In general, this is a species inhabiting regions with a "Mediterranean" climate. Central and southern Europe; Asia Minor, northern Africa; in North America extending from the Yukon to California and Arizona, and probably to Baffin Island.

E. Arctic Occurrence. The identification by Mr. Sherrin of a specimen in Dr. Polunin's 1934 collection as belonging to this species cannot be accepted with too much certainty. The species is typical of regions having a much warmer climate, in spite of its occurrence in the Yukon.

(? N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 669*.)

108. **Funaria polaris** Bryhn, Rept. Second Norwegian Arct. Exped. "Fram", No. 11, p. 70 (1906).

General Distribution. Still known only from the type locality cited below.

E. Arctic Occurrence.

1. ELLESMERE: Harbour Fiord (Simmons ex Bryhn 1906, p. 70).

109. **Funaria hygrometrica** Hedw., Sp. Musc. Frond., p. 172 (1801).

var. **arctica** Berggr., K. Sv. Vet.-Akad. Handl., XIII, 7, p. 57 (1875).

General Distribution. Circumboreal. Although the species is distributed almost throughout the world, this variety is known only from Spitsbergen, Siberia, Greenland, and Arctic America.

E. Arctic Occurrence. Known previously in the Canadian Eastern Arctic only from the collections made by the Second *Fram* Expedition.

1. ELLESMERE: *South Coast,* 'Stenkulsfjorden' and Goose Fiord (Simmons ex Bryhn 1906, p. 71).
3. N. BAFFIN: Pond Inlet, Polunin 1936 (F,A,X) 2470a *c.fr.*

SPLACHNACEAE

110. **Voitia hyperborea** Grev. & Arn., Act. Soc. Wern., IV, p. 109 (1825).

General Distribution. Spitsbergen, Novaya Zemlya, Arctic Asia, Greenland; in North America only in the Arctic Archipelago.

E. Arctic Occurrence. Widely distributed in our area, although nowhere common.

1. ELLESMERE: *Grant Land,* Floeberg Beach *c.fr.* (Feilden ex Mitten 1878, p. 316); Musk-ox Bay (Hart ex Mitten 1878, p. 318); Fort Conger (Peary ex Bryhn 1908, p. 16). *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1906, p. 69). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 69). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 69).
4. C. BAFFIN: Cape Searle (Taylor ex Dickie 1869, p. 462). Cumberland Sound (Taylor ex Dickie 1869, p. 462).
6. MELVILLE PENINSULA: "N.E. coast of America, lat. 67½ north" (Perry ex Hooker 1825a, p. 419).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 8, "apparently the most southerly station yet discovered" *scr.* Jennings).

111. **Tayloria acuminata** (Schleich.) Hornsch., Flora, VIII, 1, p. 78 (1826).

T. splachnoides Hook. var. *angustifolia* Schimp.

General Distribution. A very rare species of the mountains of central and northern Europe, central Asia, and western North America; also in the Canadian Rocky Mountains and the Arctic Archipelago.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the three stations cited below. In spite of Dickie's report, Bryhn (1906, p. 69) says "Arten findes ikke tidligere angiven for arktiske Lande."

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord (Simmons ex Bryhn 1906, p. 69). *South Coast,* Harbour Fiord (Simmons ex Bryhn 1906, p. 69).
4. C. BAFFIN: *Cumberland Sound,* Kekerten Islands (Taylor ex Dickie 1869, p. 463).

Tayloria tenuis (Smith) Schimp., Syn. (ed. 2), p. 360 (1876).

General Distribution. Circumboreal. Especially in central, western, and northern Europe, Greenland, and northern North America.

Not known in the Canadian Eastern Arctic proper, but recently collected so near to our western boundary (at Orpiktujoq, Baker Lake, by Bangsted and Birket-Smith—cf. Hesselbo 1937, p. 15), that it seems likely to be found one day within the area.

112. **Tetraplodon mnioides** (Hedw.) B.S.G., Bry. Eur. fasc. 23-4, p. 5, Pl. CCLXXXIX (1844).

T. bryoides (Zoeg.) Lindb.

Splachnum mnioides Hedw.

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Spitsbergen, Greenland; through northern North America from Alaska to Ellesmere and south in the mountains to the northernmost United States.

E. Arctic Occurrence. Reported from many widely separated localities in our area; grows on rich earth, decaying animal bodies, and dung.

1. ELLESMERE: *Grant Land,* Wrangel Bay *c.fr.* (Wolf ex Bryhn 1908, p. 16); Musk-ox Bay *c.fr.* (Hart ex Mitten 1878, p. 318); Fort Conger *c.fr.* (Peary ex Bryhn 1908, p. 16). *Hayes Sound region,* Beitstad Fiord, Skräling Island,

Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 69). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 69). *West Coast, etc.,* Reindeer Cove, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 69).

2. DEVON, ETC., ISLANDS: *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 69); Dundas Harbour, Polunin 1934 (B*) 822.
3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 463); Clyde, Polunin 1934 (B*) 600*. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a, 2613a *c.fr.*
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 19. *South Coast,* Lake Harbour, Polunin 1934 (B*) 369*; "North shore of Hudson Strait" (Bell ex Macoun 1902, p. 237); "between Amadjuak Bay and Chorkbak Inlet" (Bell 1901, p. 37); Cape Dorset, Polunin 1936 (F,A,X) 2381a *c.fr.*
6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 419).
7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1114a *c.fr.*
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1419a *c.fr.*, 1475a *c.fr.* Wolstenholme, Polunin 1936 (F,A,X) 1297a.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

var. **paradoxus** (R. Br.) *n. comb.*

Splachnum paradoxum R. Br., Suppl. App. Parry's First Voyage, p. cccii (1824).

T. pallidus Hag.

General Distribution. Circumpolar. Arctic Europe, Arctic Asia, Spitsbergen, Novaya Zemlya, Greenland; Arctic America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the collections made by the Second *Fram* Expedition, in the northernmost part of the region. Bryhn (1906, p. 69) says "Exemplarer fra samtlige Steder er fuldstaendig congruente med Originalexemplarer fra Norge."

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Eskimopolis, Twin Glacier Valley, and Cape Rutherford (Simmons ex Bryhn 1906, p. 69). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 69).

var. **urceolatus** (Brid.) *n. comb.*

Splachnum urceolatum Brid., Bryol. Univ. I, p. 242 (1826).

Tetraplodon urceolatus (Brid.) B.S.G., Bry. Eur. fasc. 23-4, p. 7, Pl. CCXC (1844).

It has been pointed out by many authors that this moss intergrades with *T. mnioides,* especially at the highest altitudes and latitudes. Indeed more than a century ago Hooker (1825a, p. 419) said of *T. mnioides* from Arctic America "The leaves are here more concave, than they are in my British and European specimens of this moss; and those of *S. urceolatum* are less so; thus, as it were, uniting the two species." This same overlapping of the two forms has been noticed in the collections of Polunin and other recent explorers, and the conclusion has been reached that *T. urceolatus* is only a reduced form of *T. mnioides.*

General Distribution. Circumpolar. Throughout arctic and alpine Europe and Asia; Greenland; in North America from Bering Sea to Ellesmere, Baffin, and Labrador, ranging south in the higher Rocky Mountains to Colorado.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic, but apparently not common.

1. ELLESMERE: *Grant Land,* Mushroom Point (Feilden ex Mitten 1878, p. 316); Musk-ox Bay (Hart ex Mitten 1878, p. 318).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2553a.
4. C. BAFFIN: *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a *c.fr.*, 2613a *c.fr.*
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 20 *c.fr. South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 2295a *c.fr.*
6. MELVILLE PENINSULA: Igloolik, Neerlo Nakto, south shore of Fury and Hecla Strait, "N.E. coast of America, lat. 67½° north", and Repulse Bay (Parry ex Hooker 1825a, p. 419).
7. N. LABRADOR: Bowdoin Harbour, Potter 1937 (Z,A) 12 *c.fr.*
8. N. QUEBEC: Wolstenholme, Dutilly 1936 (F,U,A) 786.

113. **Haplodon wormskjoldii** (Hornem.) R. Br., Verm. Bot. Schrift. I, p. 442 (1826).

Splachnum wormskjoldii Hornem.
Tetraplodon wormskjoldii (Hornem.) R. Br.

General Distribution. Circumpolar. Arctic Europe and Asia; Spitsbergen, Novaya Zemlya, Greenland; Arctic America.

E. Arctic Occurrence. Plentiful in the Far North and widespread through the rest of the Canadian Eastern Arctic. Grows chiefly on decaying animals and dung.

1. ELLESMERE: common—numerous records from almost all localities—cf. Mitten (1878, pp. 316-8) and Bryhn (1906, p. 70); the only recent collection seems to be from Craig Harbour, Polunin 1934 (B*) 826*.
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 70). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 70); Philpots Island (Philpotts ex Dickie 1871, p. 33).
3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*).
4. C. BAFFIN: "Davis Straits" *no loc.* but "east and west sides" (Taylor ex Dickie 1869, p. 463). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a, 2613a *c.fr.*
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1233a. Cape Dorset, Polunin 1936 (F,A,X) 2381a.
6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 418, sub nom. *"Aplodon Wormskjoldii* α *'folia acuminata'* Br.") "N.E. coast of America, lat. 67½ north," and Repulse Bay (Parry ex Hooker 1825a, p. 419, sub nom. *"Aplodon Wormskjoldii* β. *'folia acutiuscula'* Br."—also from Igloolik).
7. N. LABRADOR: Bowdoin Harbour, Potter 1937 (Z,A) 11 *c.fr.*
8. N. QUEBEC: Wolstenholme, Polunin 1936 (F,A,X) 1297a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Dutilly 1936 (F,U,A) 770 *c.fr.*

114. **Splachnum vasculosum** Hedw., Sp. Musc. Frond., p. 53 (1801).

General Distribution. Circumboreal. Arctic and alpine Europe and Asia; Spitsbergen (where it reaches its northern limit), Greenland; in northern North America ranging from Alaska to the Arctic Archipelago and Labrador.

E. Arctic Occurrence. Reported from several widely separated localities in the Canadian Eastern Arctic; grows on dung.

1. ELLESMERE: *Grant Land,* Musk-ox Bay *c.fr.* (Hart ex Mitten 1878, p. 318). *Hayes Sound region,* Fram Harbour (Simmons ex Bryhn 1906, p. 70).

2. DEVON, ETC., ISLANDS: 'Havhestberget' (Simmons ex Bryhn 1906, p. 70).
6. MELVILLE PENINSULA: Neerlo Nakto (Parry ex Hooker 1825a, p. 419).
9. ISLANDS IN HUDSON, ETC., BAYS: Southampton Island or near (Lyon ex Hooker 1825b, p. 197).
10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2218a *c.fr.*[1]

BRYACEAE

115. **Mielichhoferia macrocarpa** (Drumm.) Br. & S., Lond. Jour. Bot., II, p. 665 (1843).

M. porsildii Hag.

This interesting species has received considerable attention from Bartram (1927) and Andrews (1932, 1935). Andrews has recognized the identity of *M. macrocarpa* and *M. porsildii* with each other and also with the specimens collected by Lyall (*See* below).

General Distribution. American (type specimen from the Canadian Rockies), from the arctic regions southwards in the Rocky Mountains to Colorado; Greenland.

E. Arctic Occurrence. Known only in the northern part of the Canadian Eastern Arctic, whence it has been brought back from several localities.

1. ELLESMERE: *Hayes Sound region,* Eskimopolis (Simmons ex Bryhn 1906, p. 71). *South Coast,* Harbour Fiord, and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 71).
2. DEVON, ETC., ISLANDS: *Devon Island,* 'Havhestberget' (Simmons ex Bryhn 1906, p. 71); "Wellington Channel", and Beechey Island *c.fr.* (Lyall ex Hooker 1857, p. 119, sub nom. *"Mielichhoferia nitida* Hornsch. var. *gymnostoma; caetera ut in forma elongata"* scr. Mitten).

116. **Pohlia crudoides** (Sull. & Lesq.) Broth., in Engler & Prantl, Die nat. Pflanzenfam. I, 3, 1, p. 548 (1903).

General Distribution. Nearly circumboreal, including Fennoscandia and Greenland.

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic, fulfilling in part the prediction of Andrews (1935, p. 191) who says "An Arctic plant . . . probably extending through Arctic North America."

8. N. QUEBEC: Wolstenholme, Polunin 1936 (F,A,X) 1297a.

117. **Pohlia longicolla** (Hedw.) Lindb., Musc. Scand., p. 18 (1879).

Bryum longicollum Sw.

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Greenland; in North America largely restricted to high latitudes or high altitudes, extending southward to the United States (to Colorado in the west and to North Carolina in the east).

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from one report, which is probably open to some doubt. However, as the species is a boreal one, and the specimen in question was identified by Mitten, it is retained in this list.

(? ELLESMERE: Hayes Sound, lat. 78° 52′ N. *c.fr.* (Hart ex Mitten 1878, p. 318).)

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[1] Also collected slightly to the south of our area on the east coast of Hudson Bay by me in 1936—Port Harrison, Quebec, No. 1569a (F,A,X). (N.P.)

118. **Pohlia cruda** (Hedw.) Lindb., Musc. Scand., p. 18 (1879).

Webera cruda Bruch

Bryum crudum Huds.

General Distribution. Almost world-wide, although occurring chiefly at higher altitudes and latitudes. Throughout Europe and Asia; Iceland, Jan Mayen, Spitsbergen, Greenland, northern Africa, South America, the Antarctic, Kerguelen, New Zealand, and Australia; throughout northern north America, reaching from the Far North southwards into the United States, and to occasional localities in Mexico and Central America.

E. Arctic Occurrence. Widely distributed and many times reported from the Canadian Eastern Arctic. The earlier records are well substantiated and supplemented by the specimens collected by Polunin and Soper.

1. ELLESMERE: "Hayes sound lat. 78° 52′ N." (Hart ex Mitten 1878, p. 318); Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 72). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 72); Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 28), Polunin (F,A,X) 2476a 2487a. *West Coast, etc.*, 'Isachsens Fiord', Reindeer Cove, 'Vendomkap', and Excrementbugten (Simmons ex Bryhn 1906, p. 72).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 72). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 72); Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Soper 1923 (O,A) 291c 294c 298d, Polunin 1936 (F,A,X) 2498a 2523a; Beechey Island (Lyall ex Hooker 1857, p. 119).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2562a 2590a.
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 464); Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 171, Polunin 1936 (F,A,X) 2611a 2613a *c.fr.*
5. S. BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14 *c.fr.* *South Coast* (Bell ex Macoun 1902, p. 245); Lake Harbour, Polunin 1936 (F,A,X) 1170a *c.fr.*, 1233a 2295a 2309a; Cape Dorset, Soper 1926 (O,A) 663 846.
6. MELVILLE PENINSULA: ? *no loc.* (Edwards ex Hooker 1825a, p. 411); Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 15). Repulse Bay (Olsen ex Hesselbo 1937, p. 15). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 15).
7. N. LABRADOR: Lady Job Harbour, Potter 1937 (Z,A) 13; Bowdoin Harbour, Potter 1937 (Z,A) 12.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 9, sub nom. *Webera cruda* var. *minor* Schimp.).
10. W. COAST HUDSON BAY: Wager Inlet (Freuchen ex Hesselbo 1937, p. 15); Chesterfield, Dutilly 1936 (F,U,A) 590d.

119. **Pohlia acuminata** Hoppe & Hornsch., Flora, II, p. 94 (1819).

Webera polymorpha Schimp.

General Distribution. Circumboreal. Through the mountains of Europe and western Asia; Spitsbergen, Greenland; at high latitudes in North America, extending southwards in the mountains to New York in the east and to Arizona in the west, but not common.

E. Arctic Occurrence. So far as I can find, there is only one definite report of this species for the Canadian Eastern Arctic, although it is mentioned from "Hudson Straits" by Brotherus (1923, p. 231).

4. C. BAFFIN: *Cumberland Sound,* Kingnait (Taylor ex Dickie 1869, p. 463).

120. **Pohlia nutans** (Hedw.) Lindb., Musc. Scand., p. 18 (1879).
Webera nutans Hedw.

General Distribution. Nearly cosmopolitan, occurring throughout Europe and Asia, and in Iceland, Spitsbergen, Novaya Zemlya, Antarctica, and Australasia.

E. Arctic Occurrence. Common and widespread in the Canadian Eastern Arctic; reported from many localities, and on many substrata.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 72). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 72). *West Coast,* Reindeer Cove and Excrementbugten (Simmons ex Bryhn 1906, p. 72).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 72). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 72); Cape Osborne (Walker ex Hooker 1861, p. 85, sub. syn. *Bryum nutans*); Beechey Island, and "Wellington Channel" (Lyall ex Hooker 1857, p. 119, sub. syn. *Bryum nutans*).
3. N. BAFFIN: Pond Inlet *c.fr.* (Lyall ex Hooker 1857, p. 119, sub. syn. *Bryum nutans*); Mitimatalik (Mathiassen ex Hesselbo 1937, p. 15).
4. C. BAFFIN: Cape Adair and Home Bay (Taylor ex Dickie 1869, p. 464). Exeter Sound *c.fr.* (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 28). *Cumberland Sound* (Taylor ex Dickie 1869, p. 464); Pangnirtung, Polunin 1936 (F,A,X) 2611 *c.fr.*
5. S. BAFFIN: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 442* 1170a, 1233a *c.fr.;* Ashe Inlet (Tyrrell 1897, p. 217); between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37).
6. MELVILLE PENINSULA: Neerlo Nakto and Igloolik (Parry ex Hooker 1825a, p. 412, sub nom. *Bryum nutans* var. *minuta*). Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 15); Itivdleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 15). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 15).
7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1096a *c.fr.*
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1491a.[1] Wolstenholme, Dutilly 1936 (F,U,A) 928b, Polunin 1936 (F,A,X) 2252a *c.fr.*
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* York Bay (Parry ex Hooker 1825a, p. 412), (Mathiassen ex Hesselbo 1937, p. 15).

121. **Pohlia schimperi** (C. Müll.) Andrews, in Grout, Moss Fl. N. Amer. II, p. 195 (1935).
Webera schimperi Schimp.

General Distribution. Circumpolar, including Arctic Scandinavia, Spitsbergen, Greenland, and Arctic America.

E. Arctic Occurrence. This is apparently the first report of the present species from the Canadian Eastern Arctic, although it has been recorded from Labrador.

4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a *c.fr.*

122. **Pohlia cucullata** (Schwaegr.) Bruch, Flora, IX, 1, p. 274 (1826).
Webera cucullata Schimp.

General Distribution. Central and northern Europe; Asia, Spitsbergen, Greenland; in North America only at high altitudes or latitudes.

E. Arctic Occurrence. This is the first report of the species from our area, even if it was listed from "Labrador" by Andrews (1935, p. 195).

4. C. BAFFIN: Pangnirtung, Dutilly 1936 (F,U,A) 1539 *c.fr.*

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[1] This collection number is wrong for Wakeham Bay but appropriate to the nearby Sugluk, from which this specimen may possibly have come. (N.P., October 1946.)

123. **Pohlia ludwigii** (Spreng.) Broth., Acta Soc. Sci. Fenn., XIX, 2, p. 27 (1892).

Webera ludwigii Schimp.

General Distribution. Nearly circumboreal. Central and northern Europe; western Asia, Greenland; in North America from the Arctic Archipelago southward, reaching Colorado and California in the western mountains.

E. Arctic Occurrence. Known from three localities in the Canadian Eastern Arctic, the two northern ones on the basis of somewhat uncertain reports. Furthermore, Andrews (1935, p. 196) reports the species from "Labrador."

2. DEVON, ETC., ISLANDS: Philpots Island (Philpotts ex Dickie 1871, p. 33).

4. C. BAFFIN: "Davis Straits: east and west sides" (Taylor ex Dickie 1869, p. 464).

7. N. LABRADOR: Burwell, Polunin 1931 (B*) *fide* Sherrin.

124. **Pohlia drummondii** (C. Müll.) Andrews, in Grout, Moss Fl. N. Amer. II, p. 196 (1935).

P. commutata Lindb.

General Distribution. Circumboreal. Arctic and alpine Europe and Asia; Spitsbergen, Greenland (where it reaches the northernmost limit of its range at Cape Benet, lat. 83° 02′ N.—cf. Hesselbo 1923, p. 275); northern North America (mostly in the west, where it extends southward in the mountains to Colorado, Arizona, and California).

E. Arctic Occurrence. Already reported from several localities in Ellesmere Island. The range is much extended in the Canadian Eastern Arctic by the collections of Polunin.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 16, sub syn. var. *filum*). *Hayes Sound region,* Beitstad Fiord, Eskimopolis, Bedford Pim Island (♂), and Fram Harbour (Simmons ex Bryhn 1906, p. 72, sub syn. *Webera commutata*). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 72, sub syn. *Webera commutata*). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 72, sub syn. *Webera commutata*).

4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a.

10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2233b.

125. **Pohlia gracilis** (Schleich.) Lindb., Musc. Scand., p. 17 (1879).

Webera ludwigii Schimp. var. *gracilis* Schimp.

General Distribution. Circumpolar. Central and northern Europe; western and arctic Asia; in northern North America ranging from the Yukon eastwards to Baffin (?) and southwards to Montana and Washington.

E. Arctic Occurrence. The single report of this from the Canadian Eastern Arctic is perhaps based on a misidentification, but as the species occurs on the arctic mainland of North America it is retained tentatively in the list.

(? C. BAFFIN: Cumberland Sound (Taylor ex Dickie 1869, p. 464, sub syn. *Webera ludwigii* var. *gracilis*).)

Webera microcaulon C. Müll. & Kindb., in Macoun & Kindb., Cat. Can. Pl. VI, p. 114 (1892).

Concerning this "species", which was described from a specimen collected on "Digge's Island, Hudson Strait. August, 1884, R. Bell", Andrews (1935, p. 207) says "I have not been able to see [this], either from Stockholm or Ottawa." The description is too unsatisfactory to allow the species to be either established or placed suitably in synonymy. It will presumably have to be disregarded.

126. **Mniobryum albicans** (Wahlenb.) Limpr., Laubm. II, p. 277 (1892).

Pohlia wahlenbergii (Web. & Mohr) Andrews

Webera albicans Schimp.

General Distribution. Almost cosmopolitan, occurring throughout Europe and Asia, northern Africa, South America, Kerguelen, Tasmania, Australia, New Zealand, Iceland, Greenland; most of North America.

E. Arctic Occurrence. In spite of the wide distribution of this moss, as reviewed above, it is not really an arctic species, and has been reported in the Canadian Eastern Arctic from only two localities in the extreme southeast.

7. N. LABRADOR: Burwell, Polunin 1931 (B*).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

127. **Anomobryum concinnatum** (Spruce) Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm 1861, p. 277 (1862).

General Distribution. Circumboreal. Arctic and alpine Europe; Caucasus, Arctic Asia, Iceland, Greenland; in northern North America extending from Alaska to Ellesmere and Labrador, and south into the United States.

E. Arctic Occurrence. This variable species, which has been interpreted in many different ways, is known in the Canadian Eastern Arctic only from Simmons's one collection cited below, from the northern part of the region.

1. ELLESMERE: Cape Rutherford (Simmons ex Bryhn 1906, p. 72).

128. **Plagiobryum demissum** (Hoppe & Hornsch.) Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm 1862, p. 606 (1863).

General Distribution. Nearly circumboreal. Central, western, and northern Europe; central Asia; Greenland; in northern North America extending southward in the Rocky Mountains to Colorado.

E. Arctic Occurrence. Twice reported previously from the Canadian Eastern Arctic, from widely separated localities.

1. ELLESMERE: Lastraea Valley (Simmons ex Bryhn 1906, p. 72).
4. C. BAFFIN: Dickie's report (1869, p. 464, sub nom. *Zieria demissa*) of the species from Davis Strait: "east and west sides, very local", on the basis of Taylor's collections, belongs here.
7. N. LABRADOR: Burwell, Polunin 1931 (B*).

129. **Leptobryum pyriforme** (Hedw.) Schimp., Coroll. Bry. Eur., p. 64 (1855).

General Distribution. Almost cosmopolitan, occurring through Europe and Asia, and North and South America; also in Tasmania and New Zealand; often a weed.

E. Arctic Occurrence. Widespread through the Canadian Eastern Arctic, on nearly every substratum; usually with fruit.

1. Ellesmere: *Hayes Sound,* lat. 78° 52′ N. *c.fr.* (Hart ex Mitten 1878, p. 318); near Fort Juliane, Beitstad Fiord, and Fram Harbour (Simmons ex Bryhn 1906, p. 72). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 72); Craig Harbour, Polunin 1936 (F,A,X) 2487a *c.fr*
2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2523a *c.fr.*
4. C. Baffin: Dickie's ambiguous report (1869, p. 463) of the species from Davis Strait: "On east and west sides, but not frequent" belongs here.
5. S. Baffin: *South Coast,* Amadjuak Bay, Soper 1926 (O,A) 903b; Cape Dorset, Polunin 1936 (F,A,X) 2381a *c.fr.*
7. N. Labrador: Burwell, Polunin 1931 and 1936 (F,A,X,B*) *c.fr.*
10. W. Coast Hudson Bay: Chesterfield, Polunin 1936 (F,A,X) 2240a *c.fr.*

130. [1]**Bryum brownii** B.S.G., Bry. Eur. fasc. 32, Suppl. 1, p. 3, Pl. CCCXXXVII (1846).

General Distribution. Northern Scandinavia; Greenland; Arctic America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from two rather old reports, and not since rediscovered, although the type locality is on nearby Melville Island.

1. Ellesmere: *Grant Land,* Floeberg Beach (Feilden ex Mitten 1878, p. 317); Musk-ox Bay (Hart ex Mitten 1878, p. 318).

(? Islands in Hudson, etc., Bays: Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46).)

131. **Bryum fridtzii** Hagen, Musc. Norv. Bor., p. 217 (1901).

General Distribution. Northernmost Scandinavia; Arctic America.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from Simmons's collections made during the Second *Fram* Expedition.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 114). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 114).

132. **Bryum pendulum** (Hornsch.) Schimp., Coroll. Bry. Eur., p. 70 (1855).

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Iceland, Greenland; in northern North America southward to the United States.

E. Arctic Occurrence. On many substrata, and in nearly all parts of the Canadian Eastern Arctic. Of its variability in different habitats and localities on Ellesmere Island, Bryhn (1906) has given a good account.

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[1] I am very grateful to Professor A. LeRoy Andrews, of Cornell University, who is the authority on the North American Bryaceae, for identifying most of the specimens of *Pohlia* and *Bryum* collected by Polunin, Dutilly, Soper, and Potter. Dr. Andrews is at present engaged in revising the North American species of *Bryum*, and has in his possession all of Simmons's specimens that are cited by Bryhn (1906). Although his studies are not completed, Dr. Andrews has discovered a rather high percentage of misidentifications in the reports of Bryhn and others. Consequently, I shall consider the present list of species of *Bryum* as only tentative, to be subject to revision upon the completion and publication of Dr. Andrews's monograph of the North American species. As an additional caution against inaccuracy in this list, I have excluded several species that are not well known, and are probably misidentified, as well as the twenty "new species" described by Bryhn and Ryan in the report of the Second *Fram* Expedition. The species excluded are as follows: *Bryum terrestre* Hag., *B. minus* Arn., *B. subnitidulum* Arn., *B. groenlandicum* Arn., *B. hyperboreum* Bryhn & Ryan, *B. laxirete* Bryhn & Ryan, *B. liliputanum* Bryhn & Ryan, *B. parvum* Bryhn & Ryan, *B. brachythecium* Bryhn & Ryan, *B. gemmaceum* Bryhn & Ryan, *B. corioïdeum* Bryhn & Ryan, *B. angustidens* Bryhn & Ryan, *B. semiovatum* Bryhn & Ryan, *B. cancelliforme* Bryhn & Ryan, *B. subfoveolatum* Bryhn & Ryan, *B. simmonsii* Bryhn & Ryan, *B. nodosum* Bryhn & Ryan, *B. glomeratum* Bryhn & Ryan, *B. pertenellum* Bryhn & Ryan, *B. densum* Bryhn & Ryan, *B. teretinerve* Bryhn & Ryan, *B. cyclophylloides* Bryhn & Ryan, *B. paganum* Bryhn & Ryan, and *B. penduliforme* Bryhn & Ryan.

[Dr. Andrews's monograph referred to by Professor Steere was published in 1940 and is listed in the "References" at the end of this paper. N.P., October 1946.]

1. Ellesmere: *Grant Land,* Dumbbell Harbour (Feilden ex Mitten 1878, p. 317); Fort Conger (Peary ex Bryhn 1908, p. 113). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cocked Hat Island, Bedford Pim Island, and Cape Rutherford (Simmons ex Bryhn 1906, p. 113). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 113); Craig Harbour, Polunin 1936 (F,A,X) 2487a. *West Coast, etc.,* Reindeer Cove, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 113).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 113). *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 113).
3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2575a.
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1170a *c.fr.*
8. N. Quebec: Cape Prince of Wales (Bell ex Macoun and Kindberg 1892, p. 119); Wakeham Bay, Polunin 1936 (F,A,X) 1475a. Digges Island (Bell ex Macoun and Kindberg 1892, p. 119).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 9), Polunin 1936 (F,A,X) 2294a.

133. **Bryum arcticum** (R. Br.) B.S.G., Bry. Eur. fasc. 32, Suppl. 1, p. 2 (1846).

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Spitsbergen, Iceland, Greenland; northern North America at high latitudes or altitudes.

E. Arctic Occurrence. Reported previously from several localities in the Canadian Eastern Arctic, and collected again by Polunin and Dutilly.

1. Ellesmere: *Grant Land,* Musk-ox Bay (Hart ex Mitten 1878, p. 318). *Hayes Sound region,* Cape Viele, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 112). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 112). *West Coast,* Excrementbugten (Simmons ex Bryhn 1906, p. 112).
2. Devon, etc., Islands: *Devon Island,* 'Havhestberget' (Simmons ex Bryhn 1906, p. 112); Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. Baffin: "Davis Straits: east and west sides" (Taylor ex Dickie 1869, p. 164).
5. S. Baffin: "Ashe's Inlet, or North Bluff" (Bell 1884, p. 46); between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37).
8. N. Quebec: Wolstenholme, Polunin 1936 (F,A,X) 2252a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,C,A) 494 *c.fr.*

134. **Bryum tomentosum** Limpr., in Hagen, Musc. Norv. Bor., p. 208 (1901).

General Distribution. Nearly circumboreal. Northern Scandinavia, West Greenland; Arctic North America (where it reaches its northern limit).

E. Arctic Occurrence. Apparently limited to the Far North.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 112). *South Coast,* Harbour, Musk-ox, and South Cape Fiords (Simmons ex Bryhn 1906, p. 112).

135. **Bryum arcuatum** Limpr., Jahresb. d. Schles. Ges., LX, p. 237 (1883).

General Distribution. Nearly circumboreal. Northernmost Scandinavia; East and West Greenland; Arctic America.

E. Arctic Occurrence. Known only from the Far North.

1. Ellesmere: Goose Fiord (Simmons ex Bryhn 1906, p. 112).
2. Devon, etc., Islands: 'Havhestberget' (Simmons ex Bryhn 1906, p. 112).

136. **Bryum pearyanum** Bryhn, Christiania Vid.-Selsk. Förh. 1908, 5, p. 17 (1908).

General Distribution. Still known only from the type and one other locality in Grant Land, Ellesmere Island.

E. Arctic Occurrence. Known only from the Far North.

1. Ellesmere: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 17); Fort Conger (Peary ex Bryhn 1908, p. 17).

137. **Bryum micans** Limpr., Jahresb. d. Schles. Ges., LX, p. 236 (1883).

General Distribution. Northernmost Scandinavia; Faeröe Islands, Greenland; Arctic America, where it reaches its northernmost known limit of distribution.

E. Arctic Occurrence. Known only from two localities in Ellesmere.

1. Ellesmere: *Hayes Sound region,* Bedford Pim Island (Simmons ex Bryhn 1906, p. 113). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 113).

138. **Bryum cernuum** (Sw.) Lindb., Musc. Scand., p. 16 (1879).

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Greenland; in northern North America extending southward into the United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from one early record, and not since re-collected.

2. Devon, etc., Islands: Powell Creek (Lyall ex Hooker 1857, p. 119).

139. **Bryum opdalense** Limpr., Jahresb. d. Schles. Ges., LX, p. 238 (1883).

General Distribution. Northern Scandinavia; Arctic America.

E. Arctic Occurrence. Known only from one locality in Ellesmere Island.

1. Ellesmere: Twin Glacier Valley *c.fr.* (Simmons ex Bryhn 1906, p. 91).

140. **Bryum rutilans** Brid., Bryol. Univ. I, p. 684 (1826).

Bryum oenum Blytt

General Distribution. Circumboreal. Northernmost Scandinavia, Bear Island, Spitsbergen, Siberia, Novaya Zemlya, Greenland; Arctic America.

E. Arctic Occurrence. Known only from the reports of two arctic expeditions. Concerning its distribution in Ellesmere and northernmost Devon Island, Bryhn (1906, p. 96) says "This species is among the most common mosses and it was collected in all the localities investigated" (*transl.*). In view of the complete failure of all collectors since Simmons to find it again (or perhaps the failure of bryologists since Bryhn to identify it again?), I am inclined to distrust these "early" identifications, which are given here only for purposes of completeness.

(? Ellesmere: *Lady Franklin Bay,* Discovery Harbour (Hart ex Mitten 1878, p. 318). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 96). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords, 'Vendomkap' (Simmons ex Bryhn 1906, p. 96). *West Coast,* Reindeer Cove and Excrementbugten (Simmons ex Bryhn 1906, p. 96).)

(? Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 96). *Devon Island,* Castle Island and 'Havhestberget' (Simmons ex Bryhn 1906, p. 96).)

141. **Bryum pallens** Brid., Musc. Recent. II, 3, p. 145 (as syn.)[1] (1803).

General Distribution. Circumboreal. Throughout the mountains of central and northern Europe and Asia; Spitsbergen, Greenland, the Andes of South America; in northern North America from Alaska to Ellesmere and south to the northern United States.

E. Arctic Occurrence. Reported from several localities in the Canadian Eastern Arctic, from different collections.

1. ELLESMERE: *Grant Land,* lat. 82° 27′ N. (Wolf ex Bryhn 1908, p. 18). *Hayes Sound region,* Beitstad Fiord, Cape Viele, and Fram Harbour (Simmons ex Bryhn 1906, p. 110). *South Coast,* Goose Fiord *c.fr.* and Harbour Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 110). *West Coast,* Lands End, Reindeer Cove *c.fr.*, and 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 110).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 110). *Devon Island,* Castle Island (Simmons ex Bryhn 1906, p. 110); Philpots Island (Philpotts ex Dickie 1871, p. 33); "between Beechey Island and Northumberland Sound" (Lyall ex Hooker 1857, p. 119).

142. **Bryum turbinatum** (Hedw.) Schwaegr., Suppl. I, 2, p. 109 (1816).

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Spitsbergen, Greenland, the Andes of South America; in northern North America extending southward to the United States.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic from three localities in the south and west.

4. C. BAFFIN: Pangnirtung, Polunin 1936 (F,A,X) 2613c.
6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 412).
9. ISLANDS IN HUDSON, ETC., BAYS: *no loc.* (Lyon ex Hooker 1825b, p. 197). *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 412, sub nom. "β *foliis brevioribus*").

143. **Bryum obtusifolium** Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXIII, p. 544 (1867).

General Distribution. Circumpolar. Alpine and Arctic Europe and Asia, Spitsbergen, Franz Joseph Land, Greenland (where it reaches its northern limit at Low Point, lat. 83° 06′ N. on the north coast), and the American Arctic Archipelago.

E. Arctic Occurrence. A truly arctic species, reported in the Canadian Eastern Arctic from the extreme north. Bryhn (1906, p. 109) says of the material collected by the Second *Fram* Expedition "This is one of the most commonly occurring species, and was found beyond doubt in every one of the localities investigated" (*transl.*).

1. ELLESMERE: *Grant Land,* lat. 82° 27′ N. (Wolf ex Bryhn 1908, p. 18). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 109). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 109); Craig Harbour, Soper 1923 (O.A.) 252. *West Coast, etc.,* Reindeer Cove, 'Isachsens Fiord', Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 109).

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[1] In answer to my inquiry about this in its relation to the application of the "International Rules", Professor Steere replied: "In spite of Article 40, we bryologists (or muscologists) are in an awkward position. Many mosses were beautifully described, figured and understood under their current names prior to Hedwig, 1801. I feel that the first mention of these well-established pre-Hedwigian names, even in synonymy, validates them, since it is not the usual question of accidental new combinations in synonymy. If you take the opposite side of this somewhat academic question, then the proper citation is: Roehl., Deutschl. Fl., III, p. 96 (1813)". (N.P., November 1946.)

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 109). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 109); Dundas Harbour, Soper 1923 (O,A) 287, Polunin 1936 (F,A,X)) 2498a.
3. N. Baffin: Pond Inlet, Soper 1923 (O,A) 519.
5. C. Baffin: *South Coast,* Fox Islands in Gordon Bay, Soper 1926 (O,A) 751; Cape Dorset, Soper 1926 (O,A) 565.
9. Islands in Hudson, etc., Bays: Salisbury Island, Burwash 1924 (O,A).

144. **Bryum cyclophyllum** (Schwaegr.) B.S.G., Bry. Eur. fasc. 6-9, p. 63, Pl. CCCLXX (1839).

General Distribution. Circumboreal. Through the mountains of Europe; Siberia; Greenland; northern North America and southward to the northernmost United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from various parts of Ellesmere Island.

1. Ellesmere: *Grant Land,* Fort Conger (Wolf ex Bryhn 1908, p. 18). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Eskimopolis, Cocked Hat Island (Simmons ex Bryhn 1906, p. 107). *South Coast,* Fram and Goose Fiords (Simmons ex Bryhn 1906, p. 107).

145. **Bryum purpurascens** (R.Br.) B.S.G., Bry. Eur. fasc. 32, Suppl. 1, p. 2, Pl. CCCXXXVI (1846).

General Distribution. Circumpolar. Arctic Scandinavia, Arctic Siberia, northernmost North America.

E. Arctic Occurrence. Evidently rare.

2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. Baffin: "Davis Straits: east and west sides" (Taylor ex Dickie 1869, p 464).

146. **Bryum autumnale** Limpr., Jahresb. d. Schles. Ges., LX, p. 239 (1883).

General Distribution. Northern Scandinavia and Arctic America.

E. Arctic Occurrence. Evidently limited.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 73). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 73). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 73).

147. **Bryum calophyllum** R.Br., Suppl. App. Parry's First Voyage, p. c[c]xcvi (1824).

General Distribution. Circumboreal. Widespread in Europe and Asia, Spitsbergen, Greenland (where it reaches its northernmost limit at Low Point, lat. 83° 06′ N. on the north coast); Arctic America (from which it was originally described), extending southward at least in the mountains to the United States.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic and reported from many localities in the northern part.

1. Ellesmere: *Grant Land,* Floeberg Beach (Feilden ex Mitten 1878, p. 317); Lincoln Bay (Peary ex Bryhn 1908, p. 17). *Lady Franklin Bay,* Discovery Harbour (Hart ex Mitten 1878, p. 317); Fort Conger (Peary ex Bryhn 1908, p. 17). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 96). *South Coast,* Fram Fiord, Musk-ox Fiord *c.fr.,* and Goose Fiord (Simmons ex Bryhn 1906, p. 96). *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 96).

2. DEVON, ETC., ISLANDS: *Devon Island,* 'Havhestberget' (Simmons ex Bryhn 1906, p. 96); Philpots Island (Philpotts ex Dickie 1871, p. 33); Beechey Island *c.fr.* (Lyall ex Hooker 1857, p. 114).
4. C. BAFFIN: "Davis Straits: west side, frequent" (Taylor ex Dickie 1869, p. 464).
6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 412).

148. **Bryum lacustre** Bland., in Sturm, Deutschl. Crypt. Fl. II, 10, p. 13 (1809).

General Distribution. Circumboreal. Western and central Europe; Asia; Arctic America.

E. Arctic Occurrence. Known in Ellesmere Island from the collections of the Second *Fram* Expedition, and found in northern Baffin Island by Polunin.

1. ELLESMERE: *Hayes Sound region,* Fram Harbour (Simmons ex Bryhn 1906, p. 73). *South Coast,* Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 73).
3. N. BAFFIN: Pond Inlet, Polunin 1936 (F,A,X) 2470a.

149. **Bryum aggattuense** Philib., Rev. Bryol., XXVIII, p. 35 (1901).

General Distribution. Known only from the type locality on Aggattu Island, Alaska, and the one station in the Canadian Eastern Arctic cited below.

E. Arctic Occurrence. Evidently rare.

1. ELLESMERE: Goose Fiord (Simmons ex Bryhn 1906, p. 97).

150. **Bryum globosum** Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXIII, p. 546 (1867).

General Distribution. Arctic Scandinavia, Arctic Siberia, Spitsbergen, Greenland, Arctic America.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic only from the material collected by the Second *Fram* Expedition.

1. ELLESMERE: *South Coast,* Harbour, South Cape, and Musk-ox Fiords *c.fr.* (Simmons ex Bryhn 1906, p. 73).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2293a *c.fr.*

151. **Bryum limprichtii** Kaurin, Bot. Notis., p. 87 (1886).

General Distribution. Arctic Scandinavia, Greenland, Arctic America.

E. Arctic Occurrence. Known only from the Far North.

1. ELLESMERE: *Hayes Sound region,* Fram Harbour (Simmons ex Bryhn 1906, p. 94). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 94). 'Vendomkap' (Simmons ex Bryhn 1906, p. 94).

152. **Bryum languidum** Hagen, Medd. om Grønland, XXVI, p. 462, Pl. XV (1904).

General Distribution. Known only from the type locality in Greenland (Disko Island) and from the Hayes Sound region of Arctic America.

E. Arctic Occurrence. Evidently very rare.

1. ELLESMERE: Lastraea Valley (Simmons ex Bryhn 1906, p. 111).

153. **Bryum inclinatum** (Sw.) B.S.G., Bry. Eur. fasc. 6-9, p. 17, Pl. CCCXXXIV (1839).

General Distribution. Widespread in Europe and Asia; northern Africa, Spitsbergen, Iceland, Jan Mayen, Greenland; Arctic America and southward to the United States.

E. Arctic Occurrence. Previously reported from several localities in the Canadian Eastern Arctic, and collected in several more by Dr. Polunin.

1. ELLESMERE: *Hayes Sound region,* Skräling Island and Eskimopolis (Simmons ex Bryhn 1906, p. 75). *South Coast,* Harbour Fiord (Simmons ex Bryhn 1906, p. 75).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2588a.
4. C. BAFFIN: Pangnirtung, Polunin 1936 (F,A,X) 2611a.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1170a.
7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1082a *c.fr.*
9. ISLANDS IN HUDSON, ETC., BAYS: Mansfield (Mansel) Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 120).

154. **Bryum curvatum** Arn. & Kaurin, Bot. Notis., p. 67 (1897).

General Distribution. Northernmost Norway and Sweden; Arctic America.

E. Arctic Occurrence. Evidently rare.

1. ELLESMERE: Twin Glacier Valley *c.fr.* (Simmons ex Bryhn 1906, p. 91).

155. **Bryum crispulum** Hampe, in C. Müll., Die II. Deutsch. Nordpolarf. II, p. 69 (1873).

General Distribution. Circumpolar. Chiefly in Europe, Spitsbergen, Greenland, and Arctic America.

E. Arctic Occurrence. Apparently rather widespread.

1. ELLESMERE: *Grant Land,* Lincoln Bay (Wolf ex Bryhn 1908, p. 19); Wrangel Bay (Wolf ex Bryhn 1908, p. 19); Fort Conger (Peary ex Bryhn 1908, p. 19). *Hayes Sound region,* Beitstad Fiord, Lastraea Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 111). *South Coast,* Goose and Harbour Fiords (Simmons ex Bryhn 1906, p. 111). *West Coast,* 'Isachsens Fiord' and Excrementbugten (Simmons ex Bryhn 1906, p. 111).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 111). *Devon Island,* Castle Island (Simmons ex Bryhn 1906, p. 111).
6. MELVILLE PENINSULA: Igloolik (Freuchen ex Hesselbo 1937, p. 15). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 15).

156. **Bryum pseudotriquetrum** (Hedw.) Schwaegr., Suppl. I, 2, p. 110 (1816).

Bryum ventricosum Dicks.

General Distribution. Circumboreal. Widespread in Europe and Asia; northern Africa, Madeira, Spitsbergen, Jan Mayen, Iceland, Greenland (where it reaches its northern limit at Low Point, lat. 83° 06′ N. on the north coast—Hesselbo 1923, p. 275); northern North America and southward into the United States.

E. Arctic Occurrence. Reported from many localities, in five of the major districts of our area.

1. ELLESMERE: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 19); Fort Conger (Peary ex Bryhn 1908, p. 19). *Hayes Sound region,* Skräling Island, Cape Rutherford, Bedford Pim Island, and Eskimopolis (Simmons ex Bryhn 1906, p. 111). *South Coast,* Fram, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 111). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 111).
2. DEVON, ETC., ISLANDS: 'Havhestberget' (Simmons ex Bryhn 1906, p. 111).
3. N. BAFFIN: *Bylot Island,* Tuarpat (Freuchen ex Hesselbo 1937, p. 15). Mitimatalik (Mathiassen ex Hesselbo 1937, p. 15); "Navy Board Inlet" (Lyall ex Hooker 1857, p. 119).

6. Melville Peninsula: *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 15).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934, p. 203).

157. **Bryum subtumidum** Limpr., in Jörg., Christ. Vid.-Selsk. Förh. 1894, 8, p. 78 (1894).

General Distribution. Northern Norway and Arctic America.

E. Arctic Occurrence. Evidently rare.

1. Ellesmere: Fram Harbour *c.fr.* (Simmons ex Bryhn 1906, p. 91).

158. **Bryum retusum** Hagen, K. Norske Vid.-Selsk. Skrift. 1897, 2, p. 11 (1897).

General Distribution. Northern Norway, Faeröe Islands, Greenland; Arctic America.

E. Arctic Occurrence. Evidently rare.

1. Ellesmere: Fram Harbour *c.fr.* (Simmons ex Bryhn 1906, p. 92).

159. **Bryum stenodon** Hagen, Musc. Norv. Bor., p. 145 (1901).

General Distribution. Northern Norway and Arctic America.

E. Arctic Occurrence. Evidently rare.

1. Ellesmere: Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 92).

160. **Bryum graefianum** Schlieph., Flora, LXVIII, p. 364, Pl. VI (1885).

General Distribution. Northern and central Europe; Arctic America.

E. Arctic Occurrence. Rather widespread.

1. Ellesmere: Goose Fiord (Simmons ex Bryhn 1906, p. 94).
5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 20 *c.fr.* *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a.

161. **Bryum bimum** (Brid.) Turn., Musc. Hibern., p. 127 (1804).

General Distribution. Almost cosmopolitan. Throughout Europe, Asia, and northern North America; the Andes of Colombia and Ecuador; Kerguelen, New Zealand, and Tasmania.

E. Arctic Occurrence. Reported in the Canadian Eastern Arctic from two localities, but neither collected nor recorded during the last 70 years, so that the reports are not to be accepted without question. However, in view of its wide distribution, the species is retained tentatively in our list.

(? Devon, etc., Islands: Beechey Island (Lyall ex Hooker 1857, p. 119).)
(? C. Baffin: Kingnait (Taylor ex Dickie 1869, p. 464).)[1]

162. **Bryum nitidulum** Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXIII, p. 545 (1867).

General Distribution. Arctic Scandinavia, Spitsbergen, Greenland; Arctic America.

E. Arctic Occurrence. Rather widespread.

1. Ellesmere: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 18). *Hayes Sound region,* Cape Viele *c.fr.*, Eskimopolis *c.fr.*, Fram Harbour (Simmons ex Bryhn 1906, p. 101).
2. Devon, etc., Islands: Castle Island (Simmons ex Bryhn 1906, p. 101).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

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[1] Recently confirmed from 8. N. Quebec—*See* Foreword (p. iv). (N.P., November 1946.)

163. **Bryum microstegium** B.S.G., Bry. Eur. fasc. 32, Suppl. I, p. 7, Pl. CCCLXII (1846).

General Distribution. Alpine and Arctic Europe, Greenland, Labrador.

E. Arctic Occurrence. Evidently rare.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

164. **Bryum intermedium** (Brid.) Brid., Musc. Recent. Suppl. IV, p. 120 (1819).

General Distribution. Widespread in Europe, Asia, and northern North America; also in Tasmania and New Zealand.

E. Arctic Occurrence. Known in the southernmost part of the Canadian Eastern Arctic from a collection made by Dr. Bell and identified by Kindberg. If this were not such a widespread and common species, it might almost be omitted from the list.

(? ISLANDS IN HUDSON, ETC., BAYS: Mansfield (Mansel) Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 122).)

165. **Bryum cirratum** Hoppe & Hornsch., Flora, II, p. 90 (1819).

General Distribution. Widespread in Europe and Asia; Spitsbergen, Greenland; northern North America.

E. Arctic Occurrence. Known only from the Far North.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord and Eskimopolis (Simmons ex Bryhn 1906, p. 97). *South Coast,* Musk-ox and Goose Fiords (Simmons ex Bryhn 1906, p. 97).

166. **Bryum affine** (Bruch) Lindb., Musc. Scand., p. 16 (1879).

B. cuspidatum Schimp.

General Distribution. Circumboreal. Widespread in Europe and Asia; Greenland; northern North America.

E. Arctic Occurrence. Evidently rare.

1. ELLESMERE: Twin Glacier Valley (Simmons ex Bryhn 1906, p. 97).

167. **Bryum teres** Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XXIII, p. 545 (1867).

General Distribution. Arctic Europe, Spitsbergen, Bear Island, Greenland; Arctic America.

E. Arctic Occurrence. Found only north of Lancaster Sound.

1. ELLESMERE: *Grant Land,* Lincoln Bay (Wolf ex Brown 1908, p. 18). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Viele, and Fram Harbour *c.fr.* (Simmons ex Bryhn 1906, p. 107). *South Coast,* Fram Fiord *c.fr.,* Harbour Fiord, Musk-ox Fiord *c.fr.,* and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 107). *West Coast,* Lands End and Excrementbugten (Simmons ex Bryhn 1906, p. 107).
2. DEVON, ETC., ISLANDS: Castle Island and 'Havhestberget' (Simmons ex Bryhn 1906, p. 107).

168. **Bryum pallescens** Schleich., in Schwaegr., Suppl. I, 2, p. 107 (1816).

General Distribution. Circumboreal. Widespread in Europe and Asia; Kamchatka, Spitsbergen, Greenland; northern North America and southward to the United States.

E. Arctic Occurrence. Previously reported from several widely separated localities in the Canadian Eastern Arctic, and collected again by Polunin.

1. ELLESMERE: *Hayes Sound region,* Fort Juliane (Simmons ex Bryhn 1906, p. 106). *South Coast,* Musk-ox Fiord (Simmons ex Bryhn 1906, p. 106).
4. C. BAFFIN: Cape Adair (Taylor ex Dickie 1869, p. 464).
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2309a *c.fr.*

Bryum caespiticium Hedw., Sp. Musc. Frond., p. 180 (1801).

This species has been reported from various parts of the American Arctic, in the older literature. However, it is not really an arctic species, so these reports are almost certainly the result of misidentification—a view that is supported by the fact that several of the truly arctic species were, to early bryologists, indistinguishable from *B. caespiticium.* I believe that this latter is safely omitted from our list, in spite of Hooker's reports of it from Melville Peninsula (1825a, p. 417) and from (near?) Southampton Island (1825b, p. 197), as well as other records in the literature.

Bryum capitellatum C. Müll. & Kindb., in Macoun & Kindb., Cat. Can. Pl. VI, p. 127 (1892).

This is almost certainly a simple synonym of the preceding species, so the same remarks apply to both. It has been reported from Akpatok Island (Polunin 1934a, p. 203) as the result of an identification by Mr. Sherrin, but this is the rare instance in which I must take exception to his determination.[1]

169. **Bryum argenteum** Hedw., Sp. Musc. Frond., p. 181 (1801).

General Distribution. Throughout almost the whole world: in every continent and in nearly every climate.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic both from old reports and recent collections; not restricted to any part.

1. ELLESMERE: *Hayes Sound region,* Fram Harbour and Brevoort Island (Simmons ex Bryhn 1906, p. 107). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 107).
2. DEVON, ETC., ISLANDS: Castle Island (Simmons ex Bryhn 1906, p. 107).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 464). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613a *c.fr.*
7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1114a.

170. **Bryum stirtoni** Schimp., Syn. (ed. 2), II, p. 470 (1876).

General Distribution. Western and northern Europe; Greenland; Arctic America.

E. Arctic Occurrence. Not collected south of Lancaster Sound.

1. ELLESMERE: *Hayes Sound region,* Cape Rutherford and Brevoort Island (Simmons ex Bryhn 1906, p. 107). *South Coast,* Fram and Goose Fiords (Simmons ex Bryhn 1906, p. 107).
2. DEVON, ETC., ISLANDS: *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 107).

171. **Bryum elegans** Nees, in Brid., Bryol. Univ., I, p. 849 (1826).

General Distribution. Circumboreal. Throughout the mountains of Europe; Spitsbergen, Greenland; northernmost North America.

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[1] In defence it may be noted that Mr. Sherrin's determination was merely of "*B. capitellatum* forma." Besides the above unconfirmed reports of species that are not "taken-up" as occurring in our area, we should note that "*Bryum,* sp., cf. *B. Duvalii,* Voit." has been reported from "Chidley Peninsula, lat. 60°-60° 30′ N." (Anon. 1907, p. 86), cf. footnote on p. 374. (N.P.)

E. Arctic Occurrence. Not collected south of Lancaster Sound.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 106). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 106). *West Coast,* 'Isachsens Fiord', Reindeer Cove, and Excrementbugten (Simmons ex Bryhn 1906, p. 106).
2. Devon, etc., Islands: *Devon Island,* Devils Isle and 'Havhestberget' (Simmons ex Bryhn 1906, p. 106).

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172. **Mnium blyttii** B.S.G., Bry. Eur. fasc. 31, Suppl., p. 6, Pl. CD (1846).

General Distribution. Arctic Europe, Siberia, Spitsbergen, Greenland (where it reaches its northern limit at John Murrays Island, lat. 82° 54′ N. on the north coast—*cf.* Hesselbo 1923, p. 275); Arctic America.

E. Arctic Occurrence. Known only from the south coast of Ellesmere Island.

1. Ellesmere: Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 116).

173. **Mnium orthorrhynchium** Brid., Musc. Recent. Suppl. III, p. 45 (1817).

General Distribution. Throughout alpine and Arctic Europe and Asia; Spitsbergen, Greenland (where it reaches its northern limit at Lemming Fiord, lat. 82° 53′ N. on the north coast—cf. Hesselbo 1923, p. 275); northern North America, ranging southward into the United States.

E. Arctic Occurrence. Widespread in the insular regions.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane (Simmons ex Bryhn 1906, p. 116). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 116). *West Coast, etc.,* Excrementbugten and 'Vendomkap' (Simmons ex Bryhn 1906, p. 116).
2. Devon, etc., Islands: Dundas Harbour, Soper 1923 (O,A) 298c, Polunin 1936 (F,A,X) 2498a.
5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 372* 2309a.
6. Melville Peninsula: Vansittart Island (Freuchen ex Hesselbo 1937, p. 15).

174. **Mnium marginatum** (Dicks.) P. de Beauv., Prodr., p. 75 (1805).

M. serratum Schrad.

M. niagarae Kindb.[1]

General Distribution. Throughout the mountains of Europe and Asia; Spitsbergen; northern North America, ranging southward into the United States.

Occurrence. Previously known in the Canadian Eastern Arctic only from one somewhat doubtful report.

(? C. Baffin: Cape Searle (Taylor ex Dickie 1869, p. 464).)

7. N. Labrador: Burwell, Polunin 1931 (B* as *"Mnium niagarae" scr.* Sherrin[1]).

Mnium rostratum Schwaegr., Suppl. I, 2, p. 136 (1816).

Although this species has often been reported from the northern part of North America, it is in reality a southern one whose reports from boreal regions are almost universally the result of misidentification of *Mnium affine* Bland. This is almost certainly the explanation of the report of *M. rostratum* from "Kingnite, Cumberland Sound, rare" by Dickie (1869, p. 464).

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[1] I have taken the liberty of inserting this as a synonym (following E. G. Britton in *Bryologist,* 1900, p. 5) in order to include the specimen identified by Mr. W. R. Sherrin in my 1931 collection. (N.P.)

175. **Mnium undulatum** Hedw., Sp. Musc. Frond., p. 195 (1801).

General Distribution. Throughout the mountains of Europe and Asia; northern Africa; the Atlantic islands. Also in North America?

E. Arctic Occurrence. Although this species is not ordinarily considered to be an American one, there are many American specimens that approach it rather closely, such as the material collected by Dr. Polunin on the east coast of Baffin.

(? C. BAFFIN: Clyde, Polunin 1934 (B*) 660* *fide* Sherrin.)

176. **Mnium curvatulum** (Lindb.) Limpr., Laubm. II, p. 476 (1893).

General Distribution. Arctic Europe, Siberia, Greenland; Arctic America.

E. Arctic Occurrence. Not collected south of Lancaster Sound.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord, Lastraea Valley, and Fram Harbour (Simmons ex Bryhn 1906, p. 117). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 117). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 117).
2. DEVON, ETC., ISLANDS: 'Havhestberget' (Simmons ex Bryhn 1906, p. 117).

177. **Mnium affine** Bland., Musc. Frond. Exs. fasc. III, No. 133 (1804).

This species is most often represented in the arctic zone by the var. *integrifolium* (Lindb.) Limpr. (Laubm. II, p. 479 (1893)), which, as the name indicates, has the leaves entire or nearly so. As all possible intermediate conditions are to be found (this seems to be by far the most plentiful species of *Mnium* in the American Arctic), the records of the species and of the variety will not be segregated. Indeed it is very common and, being often possessed of nearly entire leaves, has led through an understandable misidentification to reports of *Mnium rugicum.* Another misleading report is that of Hesselbo (1937) who writes of *Mnium cuspidatum* (L.) Neck. with the remark that "All the plants examined have entire leaves (forma *integrifolia*)." He is of course referring to *M. cuspidatum* in the sense of Lindberg (Musc. Scand., p. 13 (1879)), who really meant *M. affine* (not *M. cuspidatum* in the Linnaean and Hedwigian sense).

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Spitsbergen, Bear Island, Greenland; northern North America and south to the United States (but not well developed var. *integrifolium*).

E. Arctic Occurrence. Widespread, and already reported from many localities almost throughout the Canadian Eastern Arctic.

1. ELLESMERE: *Hayes Sound region,* Skräling Island, Eskimopolis, Fram Harbour (Simmons ex Bryhn 1906, p. 117). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 117). *West Coast,* Excrementbugten (Simmons ex Bryhn 1906, p. 117).
2. DEVON, ETC., ISLANDS: *Devon Island,* Devils Isle and 'Havhestberget' (Simmons ex Bryhn 1906, p. 117); Dundas Harbour, Polunin 1936 (F,A,X) 250a[1]; Beechey Island (Lyall ex Hooker 1857, p. 119).
3. N. BAFFIN: *Pond Inlet,* Quilalukan (Freuchen ex Hesselbo 1937, p. 15, sub nom. *Mnium cuspidatum* f. *integrifolium*); Mitimatalik (Mathiassen ex Hesselbo 1937, p. 15, sub nom. *M. cuspidatum* f. *integrifolium*). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 256a.[1] Gifford Fiord (Mathiassen ex Hesselbo 1937, p. 15, sub nom. *M. cuspidatum* f. *integrifolium*).

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[1] **This is a wrong number. (N.P., October 1946.)**

5. S. Baffin: *South Coast,* Cape Dorset, Polunin 1934 and 1936 (F,A,X,B*) 2381a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 16g.
6. Melville Peninsula: Igloolik (Freuchen ex Hesselbo 1937, p. 15, sub nom. "*M. cuspidatum* f. *integrifolium*"). Vansittart Island (Freuchen ex Hesselbo 1937, p. 15, sub nom. *M. cuspidatum* f. *integrifolium*).
7. N. Labrador: Burwell, Polunin 1931 and 1936 (F,A,X,B*) 1096a; Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1461a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203, in sub nom. *M. affine* var. *rugicum*). Mansfield (Mansel) Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 138). Southampton Island (Mathiassen ex Hesselbo 1937, p. 15, sub nom. *M. cuspidatum* f. *integrifolium*).

178. **Mnium hymenophyllum** B.S.G., Bry. Eur. fasc. 31, Suppl., p. 5, Pl. CD (1846).

Cinclidium hymenophyllum (B.S.G.) Lindb.

General Distribution. Circumpolar. Arctic Europe, Asia, and North America; Spitsbergen, Greenland.

E. Arctic Occurrence. Evidently widespread.

1. Ellesmere: *Lady Franklin Bay,* Fort Conger (Peary ex Bryhn 1908, p. 19). *Hayes Sound region,* Lastraea Valley, Twin Glacier Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 119). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 119). *West Coast,* Lands End and Excrementbugten (Simmons ex Bryhn 1906, p. 119).
6. Melville Peninsula: Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 16). Vansittart Island (Freuchen ex Hesselbo 1937, p. 16).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203.)

179. **Mnium hymenophylloides** Hüben., Musc. Germ., p. 416 (1833).

General Distribution. Circumboreal. Arctic and alpine Europe; Siberia, Greenland; northern North America.

E. Arctic Occurrence. Rather well known from widely separated localities in the Canadian Eastern Arctic.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Lastraea Valley, and Fram Fiord (Simmons ex Bryhn 1906, p. 117). *South Coast,* Harbour Fiord (Simmons ex Bryhn 1906, p. 117); Craig Harbour, Polunin 1934 (B*) 846* *fide* Sherrin. *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 117).
2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 33).
3. N. Baffin: "Navy Board Inlet" (Lyall ex Hooker 1857, p. 120).
4. C. Baffin: "Cumberland Sound" (Taylor ex Dickie 1869, p. 464).
7. N. Labrador: Burwell, Polunin 1931 (B*).

180. **Mnium pseudopunctatum** Bruch & Schimp., Hook. Lond. Jour. Bot. II, p. 669, No. 253 (1843).

M. subglobosum B.S.G.

General Distribution. Circumboreal. Western, central, and northern Europe; Siberia, Iceland, Spitsbergen, Greenland; northern North America and southward to the United States.

E. Arctic Occurrence. So far as I can discover, there are only three reports of this species from the Canadian Eastern Arctic.

1. Ellesmere: *Hayes Sound region,* Lastraea Valley (Simmons ex Bryhn 1906, p. 117). *South Coast,* Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 31).
2. Devon, etc., Islands: 'Havhestberget' (Simmons ex Bryhn 1906, p. 117).

181. **Mnium punctatum** Hedw., Sp. Musc. Frond., p. 193 (1801).

General Distribution. Circumboreal. Arctic and alpine Europe, Arctic Asia, Greenland, Iceland; northernmost North America, extending southward into the United States.

E. Arctic Occurrence. Widespread but apparently not common.

1. ELLESMERE: *South Coast,* Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 30); Harbour Fiord (Simmons ex Bryhn 1906, p. 117); 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 117).
9. ISLANDS IN HUDSON, ETC., BAYS: ? Southampton Island (Lyon ex Hooker 1825b, p. 197).

182. **Cinclidium stygium** Sw., Schrad. Bot. Jour., p. 27 (1801).

General Distribution. Circumboreal? Arctic and alpine Europe; Kamchatka; throughout northern North America and extending southward into the United States.

E. Arctic Occurrence. Rare in the Canadian Eastern Arctic, and the early reports just possibly the result of confusion with other species.

1. ELLESMERE: Craig Harbour, Dutilly 1936 (F,U,A) 1271c.
3. N. BAFFIN: "Wellington Channel" (Lyall ex Hooker 1857, p. 119).
6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 413).

183. **Cinclidium subrotundum** Lindb., **Notis. Sällsk. Faun. Fl. Fenn., IX,** p. 72 (1868).

General Distribution. Circumboreal. Arctic Europe, Siberia, Novaya Zemlya, Greenland; Arctic America.

E. Arctic Occurrence. Widespread through the Canadian Eastern Arctic, and possibly not lacking in any part.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 19). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Skräling Island *c.fr.*, Cape Viele, Lastraea Valley and Cape Rutherford (Simmons ex Bryhn 1906, p. 118). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 118); Craig Harbour, Polunin 1934 (B*) 872*. *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 118).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 118). *Devon Island,* Dundas Harbour, Polunin 1936 (F,A,X) 2501a 2509a.
3. N. BAFFIN: *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b, 379e; Arctic Bay, Polunin 1936 (F,A,X) 2590b.
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613b.
7. N. LABRADOR: Burwell, Polunin 1931 (B*); Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a *c.fr.*
10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2218 *c.fr.*, 2246a.

184. **Cinclidium latifolium** Lindb., Bot. Not., p. 43 (1877).

General Distribution. Previously known only from the type locality, "mouth of the Yenisei" in northern Siberia. It has recently been reported (by Hesselbo 1937, p. 16) from Vansittart Island in the Canadian Eastern Arctic. This is a remarkable extension of range, but one to be expected.

6. MELVILLE PENINSULA: Vansittart Island (Freuchen ex Hesselbo 1937, p. 16).

185. **Cinclidium arcticum** (B.S.G.) C. Müller, Syn. I, p. 154 (1849).

General Distribution. Circumpolar. Arctic Europe, Arctic Siberia, Bear Island; Arctic America.

E. Arctic Occurrence. This species has been reported from a few but widely separated localities in the Canadian Eastern Arctic. Concerning his identification of this species from Southampton Island, Jennings (1936, p. 9) remarks "This is the most southern record for the species."

1. ELLESMERE: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 118). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 118).
3. N. BAFFIN: *Pond Inlet,* Mitimatalik (Mathiassen ex Hesselbo 1937, p. 16). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 380c.
5. S. BAFFIN: *West Coast,* Camp Kungovik, Soper 1929 (O,A) 62.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 9).

186. **Cinclidium polare** (Kindb.) Bryhn, Rept. 2nd Arct. Exp. "Fram" 11, p. 118 (1906).

General Distribution. Known only from the type material collected on Ellesmere Island and the closely adjacent North Kent Island.

E. Arctic Occurrence. Apparently limited to the Far North.

1. ELLESMERE: *Hayes Sound region,* Lastraea Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 118). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 118). *West Coast,* 'Isachsens Fiord' and Excrementbugten (Simmons ex Bryhn 1906, p. 118).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 118).

AULACOMNIACEAE

187. **Aulacomnium acuminatum** (Lindb. & Arn.) Paris, Ind. Bry. ed. 1, p. 55 (1894).

There is such extreme variation among the specimens of *Aulacomnium* that it is often difficult to establish the lines separating the various species. Thus the papillæ differ in size, number, and shape; they may even vary widely in the same species. However, although some specimens only approach the present species, several that are included here exactly matched the original description (Lindberg and Arnell, K. Sv. Vet.-Akad. Handl., XXIII, 10, p. 27 (1890), sub nom. *Sphaerocephalus acuminatus*) and also Siberian specimens that had been named by Brotherus. The large size, acuminate leaf-apices, and strongly recurved margins are the most important characters.

General Distribution. Known only from Siberia, from which it was originally described, and the Canadian Eastern Arctic, where it was first collected on Ellesmere Island by Simmons during the Second *Fram* Expedition.

E. Arctic Occurrence. Evidently fairly widespread.

1. ELLESMERE: *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 120).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
5. S. BAFFIN: Camp Kungovik, Soper 1929 (O,A) 17a.

188. **Aulacomnium turgidum** (Wahlenb.) Schwaegr., Suppl. III, 1, p. 7 (1827).

Gymnocybe turgida Lindb.

General Distribution. Circumpolar. Throughout Arctic and alpine Europe and Asia; Iceland, Jan Mayen, Spitsbergen, Greenland (where it reaches Low Point, lat. 83° 06′ N. on the north coast); northernmost North America, ranging southward to the northern United States. This is certainly one of the most characteristic and common of all arctic mosses.

E. Arctic Occurrence. Known from nearly every locality in the Canadian Eastern Arctic, both from specimens and from reports in the literature.

1. Ellesmere: common—numerous records from almost all localities—cf. Mitten (1878, p. 318), Wetherill (1895, p. 213), and Bryhn (1906, p. 120, and 1908, p. 20); also such recent collections as Craig Harbour, Polunin 1934 (B*) 830* 831* 835* 844* 873*.
2. Devon, etc., Islands: common—numerous records from almost all localities —cf. Hooker (1857, p. 119, and 1861, p. 85), Dickie (1871, p. 33), and Simmons (1906, p. 120); also such recent collections as Dundas Harbour, Soper 1923 (O.A) 298a, Polunin 1934 and 1936 (F,A,X,B*) 741* 747* 748* 751* 754* 786* 794* 811* 821* 2498, Dutilly 1936 (O,U,A) 1342a *c.fr.*
3. N. Baffin: Pond Inlet, Bazin 1934 (M*), Polunin 1934 and 1936 (F,A,X,B*) 662* 678* 695* 696* 2470a; Igluluarsuit (?= "Uglularssuit"—Freuchen ex Hesselbo 1937, p. 16). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379; Arctic Bay, Polunin 1936 (F,A,X) 2562 2563 2590. Gifford Fiord (Mathiassen ex Hesselbo 1937, p. 16).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 464); Clyde, Polunin 1934 and 1936 (F,A,X,B*) 600* 626* 627* 2591a 2604a, Dutilly 1936 (F,U,A) 1464. Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 31). *Cumberland Sound,* Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 548* 549* 551* 552* 581* 587* 2611a, 2613a *c.fr.* *Nettilling Lake,* Fox Island, Soper 1925 (O,A) 628 629 627.
5. S. Baffin: *South Coast,* Upper Savage Islands (Bell ex Macoun and Kindberg 1892, p. 145); Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 441* 1211a 1258a; Amadjuak Bay. Soper 1926 (O,A) 893; Cape Dorset, Soper 1926 (O,A) 663* 668. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 13a 15c.
6. Melville Peninsula: Igloolik (Parry ex Hooker 1825a, p. 411, sub syn. *Bryum turgidum*). Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 16); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 16). Vansittart Island (Freuchen ex Hesselbo 1937, p. 16).
7. N. Labrador: Burwell, Polunin 1931, 1934, and 1936 (F,A,X,B*) incl. 467* 908* 909* 911*, 1082a *c.fr.,* 1096a 1114a. Lady Job Harbour, Potter 1937 (Z,A) 13; Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. Quebec: Diana Bay, Ney and Courtright 1936 (F,A,B) 2407a. Wakeham Bay, Polunin 1936 (F,A,X) 1476a 1480a. Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 189* 2252, Dutilly 1936 (F,U,A) 791a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay, Polunin 1934 (B*) 165* (Sutton ex Jennings 1936, p. 10).
10. W. Coast Hudson Bay: Northwest shore, lat. 63° 55′ (Comer ex Cardot and Thériot 1900, p. 15); Chesterfield, Dutilly 1936 (F,U,A) 594a 595a, Polunin 1936 (F,A,X) 2246a.

189. **Aulacomnium palustre** (Hedw.) Schwaegr., Suppl. III, 1, p. 4 (1827).

Gymnocybe palustris Fr.

Aulacomnium papillosum C. Müll.

This species is plastic and very common; the specimens vary in size, colour, papillosity, degree of twisting of the leaves, and many other features.

Because of the variability in the amount of tomentum present and of the leaf-apices in shape, this species, through its variety *imbricatum* B.S.G., approaches *A. turgidum* so closely that it is impossible to place many of the specimens in either species with real certainty.

General Distribution. Circumboreal. Throughout Europe and Asia, especially in the mountains; Spitsbergen, Iceland, Jan Mayen, Greenland; almost throughout northern North America including the United States.

E. Arctic Occurrence. Throughout the Canadian Eastern Arctic, although not so abundant or well developed as *A. turgidum.* This species gives the impression of being not so much a truly arctic species as a general boreal one that extends into the Arctic, because it is often represented there by reduced and depauperate forms, and is generally sterile.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 20). *Hayes Sound region,* Skräling Island, Cape Viele, Lastraea Valley, Twin Glacier Valley, and Fram Harbour (Simmons ex Bryhn 1906, p. 120). *South Coast,* Harbour Fiord (Simmons ex Bryhn 1906, p. 120).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*) 751* 794* 811* 2498a.
3. N. Baffin: *Pond Inlet,* Bazin 1934 (M*), Polunin 1934 and 1936 (F,A,X,B*) 717* 2470a; Mitimatalik (Mathiassen ex Hesselbo 1937, p. 16); Quilalukan *c.fr.* (Freuchen ex Hesselbo 1937, p. 16). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379; Arctic Bay, Polunin 1936 (F,A,X) 2575a 2590a.
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 464). Clyde, Dutilly 1936 (F,U,A) 1466a, Polunin 1936 (F,A,X) 2604a. Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 31). *Cumberland Sound,* Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 551* 2613b. Koukdjuak River (Soper 1925 (O,A) 698.
5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 19. *South Coast* (Bell ex Macoun 1902, p. 261; "Ashe Inlet, Big Island" (Tyrrell 1898, p. 217); Amadjuak Bay, Soper 1926 (O,A) 894; between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37); Cape Dorset, Soper 1926 (O,A) 663 664 668, Polunin 1934 (B*) 226*.[1] *West Coast,* Camp Kungovik, Soper 1929 (O,A) 60.
6. Melville Peninsula: Igloolik (Freuchen ex Hesselbo 1937, p. 16). Vansittart Island (Freuchen ex Hesselbo 1937, p. 16).
7. N. Labrador: Burwell, Polunin 1931, 1934, and 1936 (F,A,X,B*) 450* 1082a 1096a, Dutilly 1936 (F,U,A) 1718a.
8. N. Quebec: Diana Bay, Ney and Courtright (F,A,X) 2407a. Wakeham Bay, Polunin 1936 (F,A,X) 1419a 1461a 1476a. Wolstenholme, Polunin 1936 (F,A,X) 2251 2252.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Nottingham Island (Bell ex Macoun and Kindberg 1892, p. 144). *Southampton Island* (Mathiassen ex Hesselbo 1937, p. 16); Duke of York Bay (Parry ex Hooker 1825a, p. 411, sub nom. *Bryum palustre*); South Bay, Polunin 1934 (B*) 126*, (Sutton ex Jennings 1936, p. 9).
10. W. Coast Hudson Bay: Chesterfield, Polunin 1936 (F,A,X) 2232a 2246a.

Meeseaceae

190. **Paludella squarrosa** (Hedw.) Brid., Musc. Recent. Suppl. III, p. 72 (1817).

General Distribution. Circumboreal. Through Arctic and alpine Europe; Siberia, Spitsbergen, Bear Island, Greenland; northern North America and southward to the northernmost United States.

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[1] This is a wrong number. (N.P., October 1946.)

E. Arctic Occurrence. The several reports given below are the first from the Canadian Eastern Arctic of this striking and unmistakable species.

3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2590b.
4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2613b.
7. N. Labrador: *Chidley Peninsula* (MacGregor ex Anon. 1907, p. 86); Burwell, Polunin 1931 and 1934 (B*) incl. 450* 451*, Dutilly 1936 (F,U,A) 1640 1641 1715; Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1461a.

191. **Meesea uliginosa** Hedw., Sp. Musc. Frond., p. 173 (1801).

M. trichodes (L.) Spruce

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Siberia, Greenland; widespread in northern North America, extending southward in the western mountains to California.

E. Arctic Occurrence. Previously reported from many widely separated localities in the Canadian Eastern Arctic, and now abundantly represented in the collections of Polunin, Soper, Dutilly, Potter, and others.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Skräling Island, and Lastraea Valley (Simmons ex Bryhn 1906, p. 119). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 119). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 119).
3. N. Baffin: *Pond Inlet,* Bazin 1934 (M*); Mitimatalik *c.fr.* (Mathiassen ex Hesselbo 1937, p. 15). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2553a *c.fr.* 2562a *c.fr.* 2590a *c.fr.*
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 464). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613b *c.fr.*
5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 17 *c.fr. Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14 *c.fr. South Coast,* Lake Harbour, Polunin 1936 (F,A,B) 1170a *c.fr.*; Amadjuak Bay, Soper 1926 (O,A) 894. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 17g.
6. Melville Peninsula: Cape Elizabeth *c.fr.* (Bangsted ex Hesselbo 1937, p. 15).
7. N. Labrador: bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10 *c.fr.*
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 411).
10. W. Coast Hudson Bay: Chesterfield, Polunin 1936 (F,A,X) 2232a, 2246a *c.fr.*

192. **Meesea triquetra** (Hook. & Tayl.) Ångstr., Nov. Act. Upsal., XII, p. 357 (1844).

M. tristicha B.S.G.

General Distribution. Circumboreal. Central, western, and northern Europe; Spitsbergen, Siberia, Bear Island; northernmost North America, extending southward to California in the western mountains.

E. Arctic Occurrence. Reported from several localities in the Canadian Eastern Arctic, and well represented in nearly all the more recent collections.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 20). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 119). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords, South Cape (Simmons ex Bryhn 1906, p. 119). *West Coast, etc.,* 'Isachsens Fiord', Reindeer Cove, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 119).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 119). *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 119).

3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2562a *c.fr.*, 2590a.
4. C. BAFFIN: Pangnirtung, Polunin 1936 (F,A,X) 2613b.
6. MELVILLE PENINSULA: Vansittart Island (Freuchen ex Hesselbo 1937, p. 15).
7. N. LABRADOR: Bowdoin Harbour, Potter 1937 (Z,A) 12; bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1934 and 1936 (F,A,X,B*) 130* 2293a *c.fr.*, Dutilly 1936 (O,A) 766 *c.fr.*, 768 *c.fr.*
10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2246a.

CATOSCOPIACEAE

193. **Catoscopium nigritum** (Hedw.) Brid., Bryol. Univ. I, p. 368 (1826).

This species assumes a most remarkable manner of growth in the Arctic. Here it forms very dense, low cushions, in which the most recent branches are strongly tristichous, with much reduced leaves, making it a most puzzling plant to identify.

General Distribution. Circumboreal. Throughout Europe and northern Asia; Novaya Zemlya, Spitsbergen, Greenland; northern North America from Alaska to Ellesmere and southward into the northern United States.

E. Arctic Occurrence. The species has been found in few but widely separated localities in the Canadian Eastern Arctic where its distribution is not well enough known to make general statements, but where it will probably be found eventually in every major district.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Eskimopolis, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 119). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 119). *West Coast,* Lands End, Reindeer Cove, and Excrementbugten (Simmons ex Bryhn 1906, p. 119).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 119).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X).
5. S. BAFFIN: *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 2295a, *c.fr.* *West Coast,* Camp Kungovik, Soper 1929 (O,A) 19 *c.fr.*

BARTRAMIACEAE

194. **Plagiopus oederi** (Gunn.) Limpr., Laubm. II, p. 548 (1893).

Bartramia oederi (Gunn.) Brid.

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Greenland; in northern North America ranging from Ellesmere to Alaska and southward into the United States.

E. Arctic Occurrence. Known from very few although widely separated localities in the Canadian Eastern Arctic.

1. ELLESMERE: *South Coast,* Harbour Fiord *c.fr.*, and Goose Fiord (Simmons ex Bryhn 1906, p. 120).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 120).
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2295a *c.fr.*
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

195. **Bartramia pomiformis** Hedw., Sp. Musc. Frond., p. 164 (1801).

General Distribution. Circumboreal and nearly cosmopolitan in the temperate zone. Throughout Europe and Asia, barely reaching the Arctic; northern Africa, New Zealand; in North America ranging from Alaska at least to Labrador and south to Florida.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the somewhat doubtful and ambiguous report cited below. It would be omitted if the species were not such a widespread one.

(? C. BAFFIN: Dickie's report (1869, p. 464) based on Taylor's collections from Davis Strait "East and west sides, not common" has to be placed here.)

196. **Bartramia ithyphylla** Brid., Musc. Rec. II, 3, p. 132 (1803).

General Distribution. Circumboreal. Arctic and alpine Europe; Arctic Asia, Iceland, Jan Mayen, Spitsbergen, Greenland (northwards to Low Point, lat. 83° 06′ N.); northern North America and southward in the mountains to California in the west and Pennsylvania in the east.

E. Arctic Occurrence. Reported from several different localities in the Canadian Eastern Arctic, and well represented in the collections of Polunin and Potter.

1. ELLESMERE: *South Coast,* Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 32); Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 120, sub nom. var. *strigosa* Wahlenb.).
4. C. BAFFIN: *Cumberland Sound* (Taylor ex Dickie 1869, p. 464); Pangnirtung, Polunin 1936 (F,A,X) 2613c.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2295a *c.fr.*
7. N. LABRADOR: Burwell, Polunin 1934 and 1936 (F,A,X,B*) 905* 1082a; Lady Job Harbour, Potter 1937 (Z,A) 13 *c.fr.;* Bowdoin Harbour, Potter 1937 (Z,A) 11 *c.fr.,* 12 *c.fr.;* bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 236.

197. **Conostomum boreale** Sw., N. Jour. f. Bot., I, 3, p. 26 (1806).

Conostomum tetragonum (Dicks.) Lindb.

General Distribution. Circumboreal. Alpine and Arctic Europe; Arctic Asia, Spitsbergen, Greenland; in northern North America ranging from Alaska to Ellesmere and southward to Labrador and the northernmost United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic from a few relatively old reports, but now (thanks to the collections of Polunin, Dutilly, and Potter) known from six of our ten major districts.

1. ELLESMERE: *Hayes Sound region,* Cape Viele, Lastraea Valley *c.fr.,* and Twin Glacier Valley *c.fr.* (Simmons ex Bryhn 1906, p. 120). 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 120).
2. DEVON, ETC., ISLANDS: Powell Creek (Lyall ex Hooker 1857, p. 119).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 464); Clyde, Polunin 1936 (F,A,X) 2604a *c.fr.* *Cumberland Sound,* Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 538* 550* 2613a.
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 20 *c.fr.* *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 2295a *c.fr.*
7. N. LABRADOR: Burwell, Polunin 1931 (B*); Bowdoin Harbour, Potter 1937 (Z,A) 12 *c.fr.*
8. N. QUEBEC: Wolstenholme, Dutilly 1936 (F,U,A) 787 *c.fr.*

198. **Philonotis fontana** (Hedw.) Brid., Bryol. Univ. II, p. 18 (1827).

General Distribution. Almost cosmopolitan in the temperate and boreal parts of Europe, Asia, and North America; northern Africa, Atlantic Islands, Iceland, Spitsbergen, Greenland.

E. Arctic Occurrence. This is not a truly arctic species and does not occur as abundantly as *P. tomentella.* However, it is present in the collections of Polunin and has been reported in the past from several localities.

1. Ellesmere: Floeberg Beach (Feilden ex Mitten 1878, p. 317, sub syn. *Bartramia fontana* Sw.).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2501a.
3. N. Baffin: *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b.
7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 86).
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1479a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

199. **Philonotis tomentella** Mol., in Lorentz, Moosstud., p. 170 (1864).

P. alpicola Jur.

P. fontana (Hedw.) Brid. var. *pumila* Brid.

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Iceland, Jan Mayen, Greenland (where it reaches its northern limit at Sommerdalen, lat. 82° 29′ N. on the north coast); in northern North America extending southward to the United States.

E. Arctic Occurrence. By far the most common and widely distributed species of *Philonotis* in the Canadian Eastern Arctic. The previous reports from many and widely separated localities in the region are well supplemented by the collections of Polunin and others.

1. Ellesmere: common—numerous records from almost all localities—cf. Bryhn (1906, p. 121, and 1908, pp. 19-20) and Harmsen and Seidenfaden (1932, p. 32); also the recent collection from Craig Harbour, Polunin 1934 (B*) 846*.
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 121). *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 121).
3. N. Baffin: *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2553a 2590b; Saputit (Mathiassen ex Hesselbo 1937, p. 15).
4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 32). *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613c.
5. S. Baffin: *South Coast,* Cape Dorset, Polunin 1936 (F,A,X) 2381a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 17b.
6. Melville Peninsula: Vansittart Island (Freuchen ex Hesselbo 1937, p. 15).
7. N. Labrador: Burwell, Polunin 1934 and 1936 (F,A,X,B*) 909* 911 1082a, Dutilly 1936 (F,U,A) 1640 1647 1705 1715.
10. W. Coast Hudson Bay: Chesterfield (Freuchen ex Hesselbo 1937, p. 15), Dutilly 1936 (F,U,A) 590e, Polunin 1936 (F,A,X) 2218a.

200. **Philonotis caespitosa** Wils., in Milde, Bry. Siles., p. 241 (1869).

General Distribution. Circumboreal. Widespread in Europe, although known with certainty from only a few localities; Arctic Asia, Greenland; Arctic America and southward into the United States.

E. Arctic Occurrence. Evidently limited.

1. Ellesmere: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 121).

TIMMIACEAE

201. **Timmia norvegica** Zett., Öfv. K. Vet.-Akad. Förh. Stockholm, XIX, p. 364 (1862).

General Distribution. Circumboreal. Throughout alpine and Arctic Europe and Asia; Novaya Zemlya, Spitsbergen, Bear Island, Greenland; exceedingly rare in northern North America.

E. Arctic Occurrence. Reported several times from the northern part of the Canadian Eastern Arctic, but little represented in the collections of Dr. Polunin and other recent explorers. I strongly suspect that Bryhn's remarks (1906, p. 121) on the frequency of this species in Ellesmere "Uniformly in sterile condition, one of the most commonly occurring bog mosses" (*transl.*) is based on a misidentification, because in the first place it is rarely at all abundant anywhere in its range, and in the second place it is not a moss of swamps or bogs. Consequently, the Second *Fram* Expedition citations are not included here, and Bryhn's other reports ought for safety to be queried.

1. Ellesmere: *Grant Land,* Lincoln Bay? and Wrangel Bay? (Wolf ex Bryhn 1908, p. 20); Fort Conger? (Peary ex Bryhn 1908, p. 20). *South Coast,* Craig Harbour, Polunin 1934 (B*) 826*.
6. Melville Peninsula: Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 16).

202. **Timmia austriaca** Hedw., Sp. Musc. Frond., p. 176 (1801).

Of this species, specimens growing in very unfavourable habitats are much reduced in the length of both stem and leaf. These account for the many reports of "f. *arctica.*"

General Distribution. Circumboreal. Throughout Europe and Asia, especially in the mountains; Spitsbergen, Novaya Zemlya, Bear Island, Greenland (north to Low Point, lat. 83° 06′ N.); northernmost North America extending southward into the United States, especially in the western mountains.

E. Arctic Occurrence. This is the best known species of *Timmia* in the Canadian Eastern Arctic. It is very well represented in the collections of Polunin and Soper, and has been reported from several widely separated localities in the region.

1. Ellesmere: common—numerous records from almost all localities—cf. Mitten (1878, pp. 317-19) and Bryhn (1906, p. 121, and 1908, p. 20); also such recent records as Craig Harbour, Dutilly 1936 (F,U,A) 1234b, Polunin 1936 (F,A,X) 2476a.
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 121). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 121); Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Soper 1923 (O,A) 289 291 294, Polunin 1934 (B*) 742*; Beechey Island, Soper 1923 (O,A) 318e; "between Beechey Island and Northumberland Sound" (Lyall ex Hooker 1857, p. 119).
3. N. Baffin: *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379; Arctic Bay, Polunin 1936 (F,A,X) 2590.
5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 11 17.
6. Melville Peninsula: Fury and Hecla Strait (Freuchen ex Hesselbo 1937, p. 16). Pingerqalik and Ugli Island (Mathiassen ex Hesselbo 1937, p. 16). Repulse Bay (Olsen ex Hesselbo 1937, p. 16).
8. N. Quebec: Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 237* 2252a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Southampton Island (Mathiassen ex Hesselbo 1937, p. 16).

203. **Timmia bavarica** Hessl., Comment. de Timmia, p. 19, fig. 3 (1822).

General Distribution. Widespread in the high mountains of central Europe and Asia; Greenland; at high latitudes or altitudes in North America, especially in the west.

E. Arctic Occurrence. Reported from several localities in the Canadian Eastern Arctic, but obviously not a common species.

1. Ellesmere: *South Coast,* Fram Fiord, Harbour Fiord *c.fr.,* and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 121).
2. Devon, etc., Islands: Castle Island (Simmons ex Bryhn 1906, p. 121).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

204. **Timmia megapolitana** Hedw., Sp. Musc. Frond., p. 176 (1801).

General Distribution. Circumboreal. Central and northern Europe; Spitsbergen, Greenland, Siberia; northern North America extending southward into (and almost throughout) the United States.

E. Arctic Occurrence. A very rare species in the Canadian Eastern Arctic and other arctic regions, although rather common on the mainland of North America.

2. Devon, etc., Islands: *Devon Island,* Dundas Harbour, Polunin 1934 (B*) 748*; "Wellington Channel" (Lyall ex Hooker 1857, p. 119).

ORTHOTRICHACEAE

205. **Orthotrichum anomalum** Hedw., Sp. Musc. Frond., p. 162 (1801).

General Distribution. Widespread through Europe and Asia, especially in the mountains; in northern North America extending from Labrador and Southampton Island to the Yukon, thence southward to the United States and New Mexico (in the mountains).

E. Arctic Occurrence. Known only in the very southernmost part of our area, from one report. but the species may in the future quite likely be found to occur more widely.

9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 10).

206. **Orthotrichum microblepharum** B.S.G., Bry. Eur. Suppl. fasc. 1-2, p. 2, Pl. III (1864).

O. arcticum B.S.G.

General Distribution. Circumboreal. At high latitudes and altitudes in Europe, Asia, and North America; Greenland.

E. Arctic Occurrence. Previously known in the Canadian Eastern Arctic from a very few reports.

2. Devon, etc., Islands: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1936 (F,A,X) 2501a *c.fr.*
4. C. Baffin: "Davis Straits" *no loc.* but "not unfrequent on both east and west sides" (Taylor ex Dickie 1869, p. 463).
5. S. Baffin: *West Coast,* Camp Kungovik, Soper 1929 (O,A) 15i *c.fr.*

207. **Orthotrichum speciosum** Nees, in Sturm, Deutschl. Fl. fasc. 16, c. Pl. (1819).

General Distribution. Circumboreal. Central and northern Europe; Asia, Greenland; northernmost North America, ranging southward into the western United States.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic, although not reported from many localities.

1. Ellesmere: *Lady Franklin Bay,* Discovery Harbour (Hart ex Mitten 1878, p. 318). *Hayes Sound region,* near Fort Juliane, Skräling Island, Twin Glacier Valley, Cape Rutherford (Simmons ex Bryhn 1906, p. 66). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 66).

4. C. Baffin: "Davis Straits" *no loc.* but "frequent on east and west sides" (Taylor ex Dickie 1869, p. 463).

(? Melville Peninsula: "Fine specimens in Mr. Edwards's collection" *scr.* Hooker 1825a, p. 415).

9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

208. **Orthotrichum killiasii** C. Müll., Jahresb. d. Naturf. Ges. Graubündens, III, p. 160 (1858); Bot. Zeit., XVII, p. 166 (1859).

General Distribution. ? Circumpolar. Alpine and Arctic Europe and Asia; Spitsbergen, Greenland (where it reaches its northern limit at Low Point, lat. 83° 06′ N. on the north coast—cf. Hesselbo 1923); Arctic America.

E. Arctic Occurrence. Known in North America only from the Canadian Eastern Arctic, as the result of the collections made by the Second *Fram* and Fifth Thule Expeditions.

1. Ellesmere: *Hayes Sound region,* Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 67). *South Coast,* Fram, Harbour, South Cape, and Goose Fiords (Simmons ex Bryhn 1906, p. 67).
2. Devon, etc., Islands: 'Havhestberget' (Simmons ex Bryhn 1906, p. 67).
3. N. Baffin: "Uglularssuit" (Freuchen ex Hesselbo 1937, p. 13).
6. Melville Peninsula: Igloolik Island and Fury and Hecla Strait (Freuchen ex Hesselbo 1937, p. 13). Vansittart Island (Freuchen ex Hesselbo 1937, p. 13).

209. **Orthotrichum laevigatum** Zett., Bull. Soc. Bot. Fr., IX, p. 287 (1862).

O. douglasii Duby

General Distribution. Circumboreal, including Arctic Europe and Iceland; in northern North America from Southampton Island to the Rocky Mountains of Canada and the United States.

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic, but as the locality lies well to the south and the species is probably more widespread on the northern mainland tracts than is at present realized, the extension of range is not particularly surprising.

9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1934 (B*) 166*.

210. **Orthotrichum alpestre** Hornsch., in B.S.G., Bry. Eur. fasc. 42, Suppl. I, p. 1, Pl. CCXIII (1849).

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Bear Island; northern and western North America from Ellesmere and the Yukon southward in the mountains to California.

E. Arctic Occurrence. Evidently very limited.

1. Ellesmere: *South Coast,* Harbour Fiord, and Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 67).

211. **Ulota curvifolia** (Wahlenb.) Brid., Bryol. Univ. I, p. 302 (1826).

General Distribution. Alpine and Arctic Europe; Asia, Greenland; in northern North America from Labrador (or Baffin?) and the Canadian Rocky Mountains southward, but not reaching the United States.

E. Arctic Occurrence. The one report in the literature of this species from the Canadian Eastern Arctic must be regarded with some suspicion, especially as the species has not been collected or at least reported since 1869. However, in view of its wide northern distribution on the North American mainland it may for the present be retained in the list.

(? C. BAFFIN: Cape Adair and Cape Searle, also Cumberland Gulf (Taylor ex Dickie 1869, p. 463).)

Ulota crispa (Hedw.) Brid., Musc. Recent. Suppl. IV, p. 112 (1819).

Syn. *U. crispula* Bruch

Syn. *Weissia crispula* Hook.

It is interesting to note that the combination "Weissia crispula" (not *Weisia crispula* Hedw.), even if generally accredited to Lindberg (1875), was actually employed by Hooker (1825a, p. 417)[1] just a half century earlier, although Hooker's report of the species from our area is almost certainly based on a misidentification. As *Ulota crispa* is characteristically a corticolous species and is not known from any arctic region, the plant that Parry collected on the "South shore of the strait of the Fury and Hecla"[2] is probably *U. curvifolia* (Wahlenb.) Brid., or possibly some species of *Orthotrichum.*

212. **Amphidium lapponicum** (Hedw.) Schimp., Coroll. Bry. Eur., p. 39 (1855).

Zygodon lapponicus B.S.G.

Amphoridium lapponicum Schimp.

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; Greenland (where it reaches its northern limit at Lemming Fiord, lat. 82°53′ N. on the north coast); in northern North America from Alaska to Ellesmere, southward in the mountains to Oregon and Alabama.

E. Arctic Occurrence. Previously reported from many and widely separated localities in the Canadian Eastern Arctic.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord and Bedford Pim Island (Simmons ex Bryhn 1906, p. 66). *South Coast,* Goose Fiord *c.fr.* (Simmons ex Bryhn 1906, p. 66). 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 66).

4. C. BAFFIN: "Davis Straits" *no loc.* but "east and west sides, frequent" (Taylor ex Dickie 1869, p. 463).

5. S. BAFFIN: between Amadjuak Bay and Chorkbak Inlet (Bell 1901, p. 37).

CLIMACIACEAE

213. **Climacium americanum** Brid., Musc. Recent. Suppl. II, p. 45 (1812).

General Distribution. Exclusively American. Across the northern part of the continent from the Atlantic Ocean to the Rocky Mountains, southward to the Gulf of Mexico.

E. Arctic Occurrence. This is the first report of the species from our area. The specimen is much reduced, but otherwise quite characteristic.

9. ISLANDS IN HUDSON, ETC., BAYS: Mansel (Mansfield) Island, Leechman 1936 (F,A,X) 2258a.

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[1] Cf. also Hooker and Taylor's "Muscologia Britannica" 1818, p. 46, and ed. 2, 1827, p. 84, where the same combination is used. (N.P.)

[2] And at Neerlo Nakto. Moreover, Hooker remarks *(l.c.)* that there was "A large quantity of this moss in Mr. Edwards's collection". (N.P.)

HEDWIGIACEAE

214. **Hedwigia ciliata** (Hedw.) B.S.G., Bry. Eur. fasc. 29-30, p. 5, Pl. CCLXXII-III (1846).

H. albicans Lindb.

General Distribution. Cosmopolitan. In North America ranging from Akpatok Island and the northernmost parts of the mainland southward to Mexico and Central America.

E. Arctic Occurrence. This species has been reported only once in the Canadian Eastern Arctic, from the southernmost part.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

THELIACEAE

215. **Myurella apiculata** B.S.G., Bry. Eur. fasc. 52-4, p. 4, Pl. DLX (1853).

M. tenerrima (Brid.) Lindb.

General Distribution. Circumpolar. Alpine and Arctic Europe and Asia; Spitsbergen, Iceland, Greenland (where it reaches its northernmost known limit at John Murrays Island, lat. 82° 54′ N. on the north coast—cf. Hesselbo 1923); in North America only in the northern parts, from Ellesmere to the Yukon and southward in the mountains to Utah.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic, but most common in the northern parts of the region.

1. ELLESMERE: common—numerous records from almost all localities—cf. Mitten (1878, p. 317) and Bryhn (1906, p. 124, and 1908, p. 21).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 124). *Devon Island,* Castle Island and 'Havhestberget' (Simmons ex Bryhn 1906, p. 124); Dundas Harbour, Polunin 1936 (F,A,X) 2501a 2509.
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2553 2554a 2562a.
5. S. BAFFIN: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14.
6. MELVILLE PENINSULA: Itivdleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 11).

216. **Myurella julacea** (Vill.) B.S.G., Bry. Eur. fasc. 52-4, p. 3, Pl. DLX (1853).

General Distribution. Circumboreal. Arctic and alpine Europe and Asia; Spitsbergen, Greenland (where it has its northern limit at Cape Benet, lat. 83° 02′ N. on the north coast); ranging through northern North America and southward to the northern United States.

E. Arctic Occurrence. Previously reported from many localities in different parts of the Canadian Eastern Arctic; also well represented in the collections of Polunin and others.

1. ELLESMERE: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 21). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 124). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 124); Craig Harbour, Polunin 1936 (F,A,X) 2476a. *West Coast, etc.,* 'Isachsens Fiord', Reindeer Cove, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1906, p. 124).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 124). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 124); Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Soper 1923 (O,A) 294e; "Wellington Channel" (Hooker 1857, p. 119, sub syn. *Hypnum julaceum*).

3. N. BAFFIN: Pond Inlet (Lyall ex Hooker 1857, p. 119, sub nom. *Hypnum julaceum*), Polunin 1936 (F,A,X) 2470a; Navy Board Inlet (Lyall ex Hooker 1857, p. 119, sub nom. *Hypnum julaceum*). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,A) 379b; Arctic Bay, Polunin 1936 (F,A,X) 2590.

4. C. BAFFIN: "Davis Straits" *no loc.* but "East and west sides, associated usually with *Grimmia apocarpa*" (Taylor ex Dickie 1869, p. 464).

5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2309a.

6. MELVILLE PENINSULA: Igloolik (Parry ex Hooker 1825a, p. 413, sub nom. *Hypnum moniliforme* Wahlenb.); Itividleriaq (Freuchen ex Hesselbo 1937, p. 11). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 11).

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island* (Mathiassen ex Hesselbo 1937, p. 11); South Bay, Polunin 1936 (F,A,X) 2293a.

LESKEACEAE

217. **Leskea nervosa** (Schwaegr.) Myrin, Coroll. Fl. Upsal., p. 52 (1834).

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; widespread in northern North America, from Ellesmere westward to British Columbia and southward to Labrador and the United States.

E. Arctic Occurrence. Evidently rare.

1. ELLESMERE: 'Vendomkap' (Simmons ex Bryhn 1906, p. 124).

218. **Pseudoleskea denudata** Kindb., Eur. and N.-Amer. Bryin., p. 52 (1896).

var. **holzingeri** Best, Bull. Torrey Bot. Club, XXVII, p. 229 (1900).

General Distribution. Restricted, like the species, to North America; Montana, British Columbia, Hudson Straits.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic only from the southernmost part, from the specimen mentioned in the original description.

7. N. LABRADOR: Cape Chidley (Chudleigh) (Bell ex Macoun and Kindberg 1892, p. 180, sub nom. *Pseudoleskea atrovirens* (Dicks.) B.S.G., Best *l.c.*, Macoun 1902, p. 279).

THUIDIACEAE

Heterocladium macounii Best, Bull. Torrey Bot. Club, XXVIII, p. 127 (1901).

This species is reported by Bryhn (1906, p. 125), on the basis of the material collected by Simmons during the Second *Fram* Expedition, from Beitstad Fiord, latitude 79° N. on Ellesmere Island. It is not an arctic species, however, but is restricted to the equable climate of the American northwest, being known from Vancouver Island and several localities in the state of Washington. The most closely related species (*H. heteropteroides* Best), of which this is considered by Grout (1934, p. 184) to be "scarcely more than a variety," is likewise not an arctic one, but is known only from Idaho, Oregon, and British Columbia. Consequently, one is forced to the conclusion that Bryhn was dealing with some quite different plant.

219. **Abietinella abietina** (Brid.) C. Müll., Nuov. Giorn. Bot. Ital., III, p. 115 (1896).

Thuidium abietinum B.S.G.

General Distribution. Circumboreal. Subalpine and subarctic parts of Europe and Asia; Spitsbergen, Greenland; in northern North America from the Arctic Archipelago to Alaska, and southward in the mountains to Colorado and Virginia.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic, in dry, exposed places.

1. Ellesmere: Harbour Fiord (Simmons ex Bryhn 1906, p. 125).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2498a.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 429*, 1170a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 11 13 15.
6. Melville Peninsula: Igloolik Island (Freuchen ex Hesselbo 1937, p. 11).
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 10), Polunin 1934 (B*) 106* 130*.

Amblystegiaceae

220. **Cratoneuron filicinum** (Hedw.) Roth, Hedwigia, XXXVIII, Beibl., p. 6 (1899).

Hypnum filicinum Hedw.

Amblystegium filicinum (Hedw.) De Not.

General Distribution. Throughout Europe and Asia; northern Africa, New Zealand, Spitsbergen, Greenland; frequent in northern North America, where it extends southward to New Mexico in the west and to Alabama in the east.

E. Arctic Occurrence. This species has been reported only from the northern parts of our area, although it seems certain to occur also in the south.

1. Ellesmere: *Grant Land,* Lincoln Bay (Wolf ex Bryhn 1908, p. 22). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 128). *South Coast,* Craig Harbour, Dutilly 1936 (F,U,A) 1296b; Fram, Harbour, Musk-ox, and Goose Fiords, and South Cape (Simmons ex Bryhn 1906, p. 128). *West Coast, etc.,* 'Isachsens Fiord', 'Vendomkap', and Reindeer Cove (Simmons ex Bryhn 1906, p. 128).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 128). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 128); Beechey Island (Lyall ex Hooker 1857, p. 120).

221. **Campylium hispidulum** Mitten, Jour. Linn. Soc., Bot., XII, p. 631 (1869).

var. **sommerfeltii** (Myr.) Lindb., Contr. ad Fl. Crypt. As. Bor., p. 279 (1872).

Hypnum sommerfeltii Myrin

General Distribution. Circumboreal. Throughout central and northern Europe and Asia; in North America extending from Devon Island southward into the United States.

E. Arctic Occurrence. Evidently rare.

2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 34).

222. **Campylium polygamum** (B.S.G.) Bryhn, K. Norske Vid.-Selsk. Skrift., p. 61 (1893).

Hypnum polygamum Schimp.

General Distribution. Circumboreal. Widespread in the mountains of Europe and Asia; Spitsbergen, Bear Island, Greenland (where it reaches Low Point, lat. 83° 06′ N. on the north coast—cf. Hesselbo 1923); Arctic America and southward into the United States, especially in the mountains.

E. Arctic Occurrence. Reported in the literature (or represented in recent collections) from many parts of the Canadian Eastern Arctic.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord (Simmons ex Bryhn 1907, p. 129). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 129); Reindeer Cove (Simmons ex Bryhn 1907, p. 129).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1934 (B*) 750*.
3. N. BAFFIN: *Bylot Island,* Tuarpat (Freuchen ex Hesselbo 1937, p. 11) (sub syn. *Amblystegium polygamum*). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2589a.
7. N. LABRADOR: Burwell, Polunin 1934 (B*) 467*.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* Duke of York Bay (Mathiassen ex Hesselbo 1937, p. 11, sub nom. *Amblystegium polygamum*); South Bay (Sutton ex Jennings 1936, p. 12).

223. **Campylium protensum** (Brid.) Kindb., Eur. and N.-Amer. Bryin., p. 121 (1896).

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; northern North America and southward to the United States, rare.

E. Arctic Occurrence. Evidently not common.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1907, p. 129). *South Coast,* Goose Fiord (Simmons ex Bryhn 1907, p. 129).
10. W. COAST HUDSON BAY: Chesterfield, Polunin 1936 (F,A,X) 2240a.

224. **Campylium stellatum** (Hedw.) Lange & C. Jens., Consp. Fl. Grønl., p. 328 (1887).

Hypnum stellatum Hedw.

General Distribution. Circumboreal. Alpine, Subarctic, and Arctic Europe and Asia; Spitsbergen, Greenland (where it reaches Sommerdalen, lat. 82° 29′ N. on the north coast—cf. Hesselbo 1923); in northern North America ranging from Ellesmere to Alaska and south to Labrador and the United States.

E. Arctic Occurrence. This is the commonest and most widely distributed species of *Campylium* in the Canadian Eastern Arctic. There are several previous reports of it in the literature, and the recent collections of Polunin, Dutilly, and Soper make it possible to record it from every major district in the region.

1. ELLESMERE: *Lady Franklin Bay,* Fort Conger (Peary ex Bryhn 1908, p. 22). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1907, p. 129). *South Coast,* Craig Harbour, Dutilly 1936 (F,U,A) 1271b; Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 129). *West Coast, etc.,* 'Isachsens Fiord', Reindeer Cove, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1907, p. 129).

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1907, p. 129). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 129); Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*) 751* 754* 2498b 2523a; "Wellington Channel" (Lyall ex Hooker 1857, p. 120).
3. N. Baffin: *Pond Inlet* (Lyall ex Hooker 1857, p. 120); Mitimatalik (Mathiassen ex Hesselbo 1937, p. 11, sub nom. *Amblystegium stellatum*); Navy Board Inlet (Lyall ex Hooker 1857, p. 120). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379; Arctic Bay, Polunin 1936 (F,A,X) 2553 2562a 2590.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a; Cape Dorset, Soper 1926 (O,A) 667b. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 17d 19f.
6. Melville Peninsula: Igloolik (Parry ex Hooker 1825a, p. 414). Danish Island (Freuchen ex Hesselbo 1937, p. 11, sub nom. *Amblystegium stellatum*).
7. N. Labrador: Burwell, Polunin 1931 and 1936 (F,A,X,B*) incl. 1082.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1419a. Wolstenholme, Polunin 1936 (F,A,X) 2251a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Nottingham Island (Bell ex Macoun and Kindberg 1892, p. 225). *Southampton Island,* Duke of York Bay (Parry ex Hooker 1825a, p. 414); South Bay, Dutilly 1936 (F,U,A) 767, Polunin 1936 (F,A,X) 2293a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 590g, Polunin 1936 (F,A,X) 2218a *c.fr.* 2232a.

225. **Amblystegium serpens** (Hedw.) B.S.G., Bry. Eur. fasc. 55-6, p. 9, Pl. DLXIV (1853).

General Distribution. Very widespread, especially in the cooler parts of the world; in North America extending from the arctic zone southward throughout the United States.

E. Arctic Occurrence. Apparently very limited.

9. Islands in Hudson, etc., Bays: *Southampton Island,* Duke of York Bay (Mathiassen ex Hesselbo 1937, p. 11).

226. **Amblystegiella sprucei** (Bruch) Loeske, Moosfl. d. Harz., p. 294 (1903).

Amblystegium sprucei B.S.G.

Hypnum sprucei Spruce

General Distribution. Circumboreal. Through northern and alpine Europe and Asia; Spitsbergen, Greenland; northern North America and southward into the United States.

E. Arctic Occurrence. Reported from several localities in the Canadian Eastern Arctic, but only rather far north.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 22). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 128). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 128); Excrementbugten (Simmons ex Bryhn 1906, p. 128).
2. Devon, etc., Islands: *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1906, p. 128).
3. N. Baffin: Navy Board Inlet (Lyall ex Hooker 1857, p. 120).

227. **Drepanocladus uncinatus** (Hedw.) Warnst., Beih. Bot. Centralbl., XIII, p. 417 (1903).

Hypnum uncinatum Hedw.

Amblystegium uncinatum De Not.

General Distribution. Almost cosmopolitan. Throughout Europe and Asia; Spitsbergen, Iceland, Jan Mayen, Greenland (where it reaches Low

Point, lat. 83° 06′ N. on the north coast), Andes of South America, Fuegia, Kerguelen, Australasia, Antarctica; in North America ranging from the Arctic Archipelago southward to the Gulf States in the east and to California in the west.

E. Arctic Occurrence. Reported from many localities almost throughout the Canadian Eastern Arctic, and represented in the recent collections of Polunin, Soper, Dutilly, and others by specimens from many additional stations.

1. ELLESMERE: common—numerous records from almost all localities—cf. Mitten (1878, p. 318), Bryhn 1907, p. 132, and 1908, p. 23), and Williams (1918, p. 211); also such recent collections as Craig Harbour, Soper 1923 (O,A) 252c.
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1907, p. 132). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 132); Dundas Harbour, Soper 1923 (O,A) 294a, Polunin 1934 and 1936 (F,A,X,B*) 742* 748* 754* 2498a 2501a; Beechey Island (Lyall ex Hooker 1857, p. 120); "Wellington Channel" (Lyall ex Hooker 1857, p. 120).
3. N. BAFFIN: *Pond Inlet,* Polunin 1934 (B*) 739*; Qilalukan (Freuchen ex Hesselbo 1937, p. 11); Navy Board Inlet (Lyall ex Hooker 1857, p. 120). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379b; Arctic Bay, Polunin 1936 (F,A,X,B*) 2563a 2590a.
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1934 and 1936 (F,A,X,B*) 616* 2604a. *Cumberland Sound,* Pangnirtung, Dutilly 1936 (F,U,A) 1539 1551a, Polunin 1936 (F,A,X) 2613a.
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 19 20. *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a 1258a 2295a; Cape Dorset, Soper 1926 (O,A) 839b. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 13 15.
6. MELVILLE PENINSULA: Ugli Island (Mathiassen ex Hesselbo 1937, p. 11). Vansittart Island (Freuchen ex Hesselbo 1937, p. 11).
7. N. LABRADOR: *Chidley Peninsula* (MacGregor ex Anon. 1907, p. 85); Cape Chidley (Chudleigh) (Bell ex Macoun and Kindberg 1892, p. 228); Burwell, Polunin 1931, 1934, and 1936 (F,A,X,B*) 467* 892* 894* 906* 926* 1082a incl. as "*Hypnum uncinatum* var. *plumulosum*" scr. Sherrin; Lady Job Harbour, Potter 1937 (Z,A) 13; Bowdoin Harbour, Potter 1937 (Z,A) 12; bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
8. N. QUEBEC: Diana Bay, Ney and Courtright (F,A,X) 2407a; Wakeham Bay, Polunin 1936 (F,A,X) 1419 1479a. Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 236* 2251 2252.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 11).
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 494, Polunin 1936 (F,A,X) 2233.

228. **Drepanocladus revolvens** (Sw.) Warnst., Beih. Bot. Centralbl., XIII, p. 402 (1903).

Hypnum revolvens Sw.

General Distribution. Circumboreal. Central, western, and northern Europe; northern Asia, Spitsbergen, Iceland, Jan Mayen, Greenland (where it reaches Cape Benet, lat. 83°02′ N. on the north coast); northern North America from Ellesmere to Alaska, and south into the United States.

E. Arctic Occurrence. The reports of this species from several localities in the Canadian Eastern Arctic are well supplemented by many specimens collected by Polunin, Soper, and Dutilly, so that the species is now known from every major district of the region.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 22). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat

Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1907, p. 131). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 131); Craig Harbour, Polunin 1934 (B*) 825* 846*. *West Coast, etc.,* Reindeer Cove and 'Vendomkap' (Simmons ex Bryhn 1907, p. 131).

2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1907, p. 131). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 131).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2562 2575 2590.
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Soper 1923 (O,A) 637c, Polunin 1936 (F,A,X) 2613b.
5. S. BAFFIN: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 402* 1170a. Cape Dorset, Polunin 1934 (B*) 295*.
6. MELVILLE PENINSULA: *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 11).
7. N. LABRADOR: *Chidley Peninsula* (MacGregor ex Anon. 1907, p. 86); bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a 1479a.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay, Polunin 1934 and 1936 (F,A,X,B*) 153* 2294a, Dutilly 1936 (F,U,A) 766 768.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 590 657, 658 *c.fr.,* Polunin 1936 (F,A,X) 2232a 2246a.

229. **Drepanocladus intermedius** (Lindb.) Warnst., Beih. Bot. Centralbl., XIII, p. 402 (1903).

Hypnum intermedium Lindb.

General Distribution. Circumboreal. Throughout Europe; northern Asia, Iceland, Spitsbergen, Greenland; Arctic America and south to the northernmost United States.

E. Arctic Occurrence. Previously reported from a few localities in the Canadian Eastern Arctic; collected by Soper and Polunin in several more.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 23). *Hayes Sound region,* Beitstad Fiord, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1907, p. 131). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 131); Craig Harbour, Polunin 1934 (B*) 825*. *West Coast, etc.,* 'Vendomkap' and Reindeer Cove (Simmons ex Bryhn 1907, p. 131).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1907, p. 131). *Devon Island,* Devils Isle, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 131); ? Dundas Harbour, Polunin 1936 (F,A,X) 2590a.[1]
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 696*.
4. C. BAFFIN: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 38).
5. S. BAFFIN: *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1211a; Cape Dorset, Soper 1926 (O,A) 677c. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 18 61.
7. N. LABRADOR: Burwell, Polunin 1931 (B*).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

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[1] This number should refer to Arctic Bay, N. Baffin, and so I have deemed it necessary to query the locality (N.P., October 1946.)

230. **Drepanocladus exannulatus** (B.S.G.) Warnst., Beih. Bot. Centralbl., XIII, p. 405 (1903).

Hypnum exannulatum B.S.G.

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Spitsbergen, Greenland; in northern North America extending across the continent and south into the United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic from several previous reports, and from further specimens gathered by various recent collectors.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 23, sub nom. var. *polaris* Bryhn). *Hayes Sound region,* Skräling Island (Simmons ex Bryhn 1907, p. 133).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 464); Clyde, Polunin 1934 (B*) 637. *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 179, Polunin 1934 (B*) 577*; Kingua Fiord, Soper 1924 (O,A) 126.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1211a.
7. N. LABRADOR: Cape (Chidley) Chudleigh (Bell ex Macoun and Kindberg 1892, p. 228). Burwell, Polunin 1931 and 1934 (B*) incl. 447*, and as *"Hypnum exannulatum* var. *brachydictyon" scr.* Sherrin.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 236*.

f. **tundrae** (Arn.) Mönk., in Pascher, Süssw.-Fl., XIV, p. 144 (1914).

Hypnum tundrae Arn.

E. Arctic Occurrence. Not known south of Lancaster Sound.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, and Fram Harbour (Simmons ex Bryhn 1907, p. 133). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 133); 'Vendomkap' (Simmons ex Bryhn 1907, p. 133).
2. DEVON, ETC., ISLANDS: North Kent Island, Castle Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 133).

var. **brachydictyus** (Ren.) Grout, Mosses H.-Lens and M., p. 311 (1908).

E. Arctic Occurrence. Apparently very limited.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

231. **Drepanocladus fluitans** (Hedw.) Warnst., Beih. Bot. Centralbl., XIII, p. 404 (1903).

Hypnum fluitans Hedw.

General Distribution. Almost throughout the world. Europe, Asia, Atlantic Islands, New Zealand and Tasmania, Kerguelen; in North America common throughout Canada and the northern United States.

E. Arctic Occurence. This is not a true arctic species and so has not been at all commonly collected in the Canadian Eastern Arctic. However, it is now known from seven of the ten major divisions of the region, thanks in large part to the extensive collections of Polunin and Soper.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 23).
2. DEVON, ETC., ISLANDS: Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1936 (F,A,X) 2604b. *Cumberland Sound,* Pangnirtung, Dutilly 1936 (F,U,A) 1548.
5. S. BAFFIN: Amadjuak Bay, Soper 1926 (O,A) 892b.
7. N. LABRADOR: Burwell, Polunin 1931 (B*).
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1461a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 11).

232. **Drepanocladus berggrenii** (C. Jens.) Broth., in Engler & Prantl, Die nat. Pflanzenfam. (ed. 2), XI, p. 344 (1925).

Hypnum berggrenii (C. Jens.) Hag.

General Distribution. Arctic Norway; Greenland; Arctic America.

E. Arctic Occurrence. Evidently limited.

1. ELLESMERE: *South Coast,* Goose Fiord (Simmons ex Bryhn 1907, p. 135). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1907, p. 135).

233. **Drepanocladus badius** (Hartm.) Roth, Eur. Laubm. II, p. 569 (1905).

Hypnum badium Hartm.

General Distribution. Arctic Europe and Asia; Greenland; in northern North America extending from Alaska to Ellesmere and southwards.

E. Arctic Occurrence. This has been reported from the Canadian Eastern Arctic only from the collections made by Simmons during the Second *Fram* Expedition, but has been collected since then by Polunin, Soper, and Dutilly.

1. ELLESMERE: *Hayes Sound region,* Skräling Island, Cape Viele, Lastraea Valley, and Twin Glacier Valley (Simmons ex Bryhn 1907, p. 131).
4. C. BAFFIN: Koukdjuak River, Soper 1925 (O,A) 649.
5. S. BAFFIN: Amadjuak Bay, Soper 1926 (O,A) 892. Camp Kungovik, Soper 1929 (O,A) 19.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1934 (B*) 129*.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 656.

234. **Drepanocladus aduncus** (Hedw.) Warnst., Beih. Bot. Centralbl., XIII, p. 400 (1903).

Hypnum aduncum Hedw.

General Distribution. Circumboreal. Almost throughout Europe and Asia; northern Africa, Andes of Peru, New Zealand; widely distributed through North America, including much of the United States.

E. Arctic Occurrence. This species, although an exceedingly common one on the mainland of North America, is not characteristically arctic, and as a consequence has been reported previously only from the southern parts of our area. The recent collections of Polunin and others have considerably extended the known range northwards.

2. DEVON, ETC., ISLANDS: *Devon Island,* Dundas Harbour, Polunin 1936 (F,A,X) 2501a; Beechey Island, Soper 1923 (O,A) 318b.
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Dutilly 1936 (F,U,A) 1549a, Polunin 1936 (F,A,X) 2611a.
6. MELVILLE PENINSULA: *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 11).
7. N. LABRADOR: Chidley Peninsula (MacGregor ex Anon. 1907, p. 86).
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a. Digges Island (Bell ex Macoun 1902, p. 303).
9. ISLANDS IN HUDSON, ETC., BAYS: ?Mansfield, Digges, or Nottingham Island (Bell 1884, p. 46). *Southampton Island* (? Lyon ex Hooker 1825b, p. 197); Duke of York Bay, etc. (Parry ex Hooker 1825a, p. 414).
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 664a.

var. **polycarpus** (Bland.) Warnst., Laubm. Krypt.-Fl. Mark Brandenb., p. 1000 (1906).

Hypnum polycarpon Bland.

E. Arctic Occurrence. Not rare.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 23, sub syn. *Drepanocladus polycarpus*). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1907, p. 132). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 132). *West Coast, etc.,* Lands End, Excrementbugten, and 'Vendomkap' (Simmons ex Bryhn 1907, p. 132).
2. Devon, etc., Islands: 'Havhestberget' and Devils Isle (Simmons ex Bryhn 1907, p. 132).
4. C. Baffin: *Cumberland Sound,* Pangnirtung, Dutilly 1936 (F,U,A) 1553b; Blacklead Island, Soper 1924 (O,A) 317.
8. N. Quebec: Wolstenholme, Polunin 1936 (F,A,X) 2252a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 669a.

var. **kneiffii** (Schimp.) Warnst., Beih. Bot. Centralbl., XIII, p. 400 (1903).

Hypnum kneiffii Schimp.

E. Arctic Occurrence. Uncommon.

4. C. Baffin: "Davis Straits" *no loc.* but "East and west sides; frequent" (Taylor ex Dickie 1869, p. 464).
7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1718a.

235. **Drepanocladus sendtneri** (Schimp.) Warnst., Beih. Bot. Centralbl., XIII, p. 400 (1903).

General Distribution. Circumboreal. Through the mountains of Europe; Siberia, Kerguelen, Spitsbergen, Greenland; in North America extending from the Arctic Archipelago southward into the United States.

E. Arctic Occurrence. This species has been reported from the Canadian Eastern Arctic only very recently, but many further collections have been made by Polunin and Dutilly.

3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2562.
5. C. Baffin: Lake Harbour, Polunin 1934 (B*) 388*.
8. N. Quebec: Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 236* 1297a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 11), Polunin 1934 and 1936 (F,A,X,B*) 153* 2294a, Dutilly 1936 (F,U,A) 772.

236. **Drepanocladus brevifolius** (Lindb.) Warnst., Beih. Bot. Centralbl., XIII, p. 416 (1903).

Hypnum brevifolium Lindb.

General Distribution. Spitsbergen, Bear Island, Siberia, Greenland, American Arctic Archipelago.

E. Arctic Occurrence. Reported previously from several localities in the northern part of our area, and collected again by Polunin, Soper, and Dutilly.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 23). *Hayes Sound region,* Beitstad Fiord, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, Fram Harbour, and 'Stahlknechts Island' (Simmons ex Bryhn 1907, p. 131). *South Coast,* Craig Harbour, Polunin 1934 (B*) 825* 828* 841*; Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 131). *West Coast, etc.,* 'Isachsens Fiord' and Reindeer Cove (Simmons ex Bryhn 1907, p. 131).
2. Devon, etc., Islands: 'Havhestberget' (Simmons ex Bryhn 1907, p. 131).
3. N. Baffin: Pond Inlet, Polunin 1934 (B*) 651* 666*. *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 380.
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1934 (B*) 142* 158*, Dutilly 1936 (F,U,A) 769a.

237. **Drepanocladus latifolius** (Lindb. & Arn.) Warnst., Beih. Bot. Centralbl., XIII, p. 415 (1903).

Hypnum latifolium Lindb. & Arn.

General Distribution. Known only from the type locality in Siberia, and from Ellesmere and Greenland as a result of Bryhn's report on the mosses collected during the Second *Fram* Expedition.

E. Arctic Occurrence. Not known from south of Lancaster Sound.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Lastraea Valley, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1907, p. 132). *South Coast,* Fram and Harbour Fiords (Simmons ex Bryhn 1907, p. 132). *West Coast, etc.,* Lands End, 'Isachsens Fiord', Excrementbugten, and Reindeer Cove (Simmons ex Bryhn 1907, p. 132).
2. Devon, etc., Islands: North Kent Island, and 'Havhestberget' (Simmons ex Bryhn 1907, p. 132).

238. **Drepanocladus latinerve** Warnst., Beih. Bot. Centralbl., XIII, p. 416 (1903).

Hypnum latinerve (Warnst.) Bryhn

General Distribution. Known only from the type locality in Siberia, and from Ellesmere Island, whence it was reported by Bryhn (1907, p. 131).

E. Arctic Occurrence. Evidently rare.

1. Ellesmere: Fram Harbour (Simmons ex Bryhn 1907, p. 131).

239. **Drepanocladus lycopodioides** (Brid.) Warnst., Beih. Bot. Centralbl., XIII, p. 401 (1903).

Amblystegium lycopodioides De Not.

General Distribution. Circumboreal. Europe, Siberia, Greenland; in North America reported only from Miquelon and Ellesmere Islands.

E. Arctic Occurrence. Not common.

1. Ellesmere: Discovery Harbour (Hart ex Mitten 1878, p. 319).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2293a.

240. **Hygrohypnum ochraceum** (Turn.) Loeske, Moosfl. d. Harz., p. 321 (1903).

General Distribution. Circumboreal. Widespread in Europe and Asia; Spitsbergen, Greenland; in northern North America ranging from Alaska to Devon Island and southward into the United States, especially in the mountains.

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic.

2. Devon, etc., Islands: Dundas Harbour, Dutilly 1936 (F,U,A) 1334b.

241. **Hygrohypnum palustre** (Hedw.) Loeske, Moosfl. d. Harz., p. 319 (1903).

Hypnum palustre Hedw.

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Greenland; in northern North America from Alaska to Ellesmere and southward into the United States.

E. Arctic Occurrence. Apparently limited.

1. Ellesmere: *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 130, as *Hypnum palustre*).

242. **Hygrohypnum polare** (Lindb.) Broth., in Engler & Prantl, Die nat. Pflanzenfam. I, 3, 1, p. 1041 (1909).

Hypnum polare Lindb.

General Distribution. Circumpolar. Arctic and Subarctic Europe and Asia; Spitsbergen, Greenland, Arctic America.

E. Arctic Occurrence. Known only from Ellesmere.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord, Twin Glacier Valley, Bedford Pim Island, and 'Stahlknechts Island' (Simmons ex Bryhn 1907, p. 129). *South Coast,* Craig Harbour, Dutilly 1936 (F,U,A) 1232a 1233; Goose Fiord (Simmons ex Bryhn 1907, p. 129).

243. **Calliergon trifarium** (Web. & Mohr) Kindb., Eur. and N.-Amer. Bryin., p. 85 (1897).

Amblystegium trifarium De Not.

Hypnum trifarium Web. and Mohr

General Distribution. Circumboreal. Central, western, and northern Europe; Siberia, Greenland; northern North America across the Arctic Archipelago and continental regions and extending south into the United States.

E. Arctic Occurrence. Not well known in the Canadian Eastern Arctic but apparently widespread, to judge from the various reports and specimens available.

1. ELLESMERE: *'Hayes Sound'* (Hart ex Mitten 1878, p. 318); Lastraea Valley (Simmons ex Bryhn 1907, p. 130). *South Coast,* Fram Fiord (Simmons ex Bryhn 1907, p. 130).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Dutilly 1936 (F,U,A) 1334a.
5. S. BAFFIN: Cape Dorset, Polunin 1934 (B*) 301*.
6. MELVILLE PENINSULA: Neerlo Nakto (Parry ex Hooker 1825a, p. 414).
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1479a.

244. **Calliergon turgescens** (Th. Jens.) Kindb., Eur. and N.-Am. Bryin., p. 84 (1897).

Hypnum turgescens Schimp.

General Distribution. Circumpolar. Arctic and alpine Europe and Asia; Spitsbergen, Greenland; northernmost North America and southward nearly to the United States.

E. Arctic Occurrence. Widespread in the Canadian Eastern Arctic, but never very abundant. Bryhn (1907, p. 130) says "Among the most common of bog and water mosses" (*transl.*).

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1907, p. 130). *South Coast,* Fram, Harbour, South Cape, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 130). *West Coast, etc.,* 'Vendomkap' and Reindeer Cove (Simmons ex Bryhn 1907, p. 130).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1907, p. 130). *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1907, p. 130).
3. N. BAFFIN: *Admiralty Inlet,* Red Valley (Freuchen ex Hesselbo 1937, p. 12); Arctic Bay, Polunin 1936 (F,A,X) 2590b; Saputit (Mathiassen ex Hesselbo 1937, p. 12). Cape Griffith (Mathiassen ex Hesselbo 1937, p. 12).
4. C. BAFFIN: "Davis Straits" *no loc.* but "East and west sides, local" (Taylor ex Dickie 1869, p. 465).

5. S. Baffin: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 17. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 19.
6. Melville Peninsula: Danish Island (Freuchen ex Hesselbo 1937, p. 12).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Dutilly 1936 (F,U,A) 766 769, Polunin 1936 (F,A,X) 2294a.

245. **Calliergon richardsonii** (Mitt.) Kindb., Eur. and N.-Amer. Bryin., p. 80 (1896).

General Distribution. Circumboreal. Subalpine, alpine, and arctic Europe; Siberia, Greenland; across northern North America and southward into the United States.

E. Arctic Occurrence. This is apparently the first report of the species from the Canadian Eastern Arctic, and is, as might be expected, only from the southernmost parts of the region.

7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1636, Polunin 1936 (F,A,X) 1082a.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1461a.
10. W. Coast Hudson Bay: Chesterfield, Dutilly 1936 (F,U,A) 662 663.

246. **Calliergon giganteum** (Schimp.) Kindb., Eur. and N.-Amer. Bryin., p. 80 (1897).

Hypnum giganteum Schimp.

General Distribution. Circumboreal. Throughout the mountains of Europe; Siberia, Spitsbergen, Bear Island, Greenland; northern North America through the Arctic Archipelago to Alaska, Labrador, and the United States.

E. Arctic Occurrence. Reported previously from rather few localities in the northern part of the Canadian Eastern Arctic, but collected by Polunin, Soper, and Dutilly in many other stations, so that its known range is greatly extended.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 22). *Hayes Sound region,* Cape Viele, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1907, p. 130). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 130); Craig Harbour, Dutilly 1936 (F,U,A) 1296a. *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1907, p. 130).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2562 2590.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1936 (F,A,X) 1170a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 18 60 61.
6. Melville Peninsula: Danish Island (Freuchen ex Hesselbo 1937, p. 12).
7. N. Labrador: Burwell, Polunin 1936 (F,A,X) 1096a.
10. W. Coast Hudson Bay: Chesterfield, Polunin 1936 (F,A,X) 2240a.

var. **fluitans** (Klinggr.) Roth, Eur. Laubm. II, p. 574 (1904).

General Distribution. Circumboreal. In northern North America occurring south to Montana.

E. Arctic Occurrence. Evidently rare.

4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2613d.

var. **cyclophyllotum** (Holz.) Grout, Moss Fl. N. Amer. III, p. 97 (1931).

General Distribution. Apparently restricted to North America.

E. Arctic Occurrence. Evidently rare.

3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2590b.

247. **Calliergon cordifolium** (Hedw.) Kindb., Eur. and N.-Amer. Bryin., p. 80 (1897).

Hypnum cordifolium Hedw.

General Distribution. Circumboreal; also in the Southern Hemisphere. Throughout the mountains of Europe and Asia; Iceland, Spitsbergen, Greenland, New Zealand; across northern North America and south into the United States.

E. Arctic Occurrence. Although this is not a typically arctic species, and is very rare in the arctic zone, it was long ago reported from the southern half of our area, and has since been collected in other localities by Polunin, Soper, and Dutilly.

4. C. Baffin: Pangnirtung, Polunin 1936 (F,A,X) 2613a *c.fr.*
5. S. Baffin: Cape Dorset, Soper 1926 (O,A) 666b.
6. Melville Peninsula: Igloolik (Parry ex Hooker 1825a, p. 414).
7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1639 1717.
8. N. Quebec: Wolstenholme, Polunin 1936 (F,A,X) 2251a.

(? Islands in Hudson, etc., Bays: Mansfield (Mansel), Digges, or Nottingham Island (Bell 1884, p. 46).)

248. **Calliergon orbicularicordatum** (Ren. & Card.) Broth., in Engler & Prantl, Die nat. Pflanzenfam. I, 3, 1, p. 1037 (1909).

Hypnum orbiculari-cordatum Ren. & Card.

This is, as Grout has already remarked (1931, p. 97), a "good" species. It rarely grows in pure tufts, but was found usually as single stems here and there, running through other mosses. The soft texture of the leaves, and their pale, somewhat glossy appearance, makes the plant relatively easy to recognize.

General Distribution. Previously known only from the type locality, Depot Island (Hudson Bay).

E. Arctic Occurrence. Widespread in the extreme south.

5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1170a.
8. N. Quebec: Wolstenholme, Polunin 1936 (F,A,X) 2251a.
10. W. Coast Hudson Bay: Depot Island (Comer ex Renauld and Cardot *l.c.*, cf. Macoun 1902, p. 310).

249. **Calliergon sarmentosum** (Wahlenb.) Kindb., Eur. and N.-Amer. Bryin., p. 81 (1897).

Hypnum sarmentosum Wahlenb.

Amblystegium sarmentosum (Wahlenb.), De Not.

Hypnum hyperboreum Bryhn (*fide* Grout)

General Distribution. Circumpolar; also in the Southern Hemisphere. Widespread in the mountains and northernmost part of Europe; northern Asia, Spitsbergen, Greenland (where it reaches its northernmost limit at Low Point, lat. 83° 06′ N. on the north coast); Fuegia, New Zealand, East Africa; in North America extending from the Arctic Archipelago to Alaska and Labrador, and southward to the northern United States.

E. Arctic Occurrence. Reported from several localities in the northern parts of the Canadian Eastern Arctic, and represented in the recent collections of Polunin and Dutilly from nearly all divisions of the region.

1. Ellesmere: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 22, sub nom. *Hypnum sarmentosum* var. *acuminatum* Bryhn). *Hayes Sound* (Hart ex Mitten 1878, p. 319); Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis,

Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Fram Harbour, and 'Stahlknechts Island' (Simmons ex Bryhn 1907, p. 130). *South Coast*, Fram and Goose Fiords (Simmons ex Bryhn 1907, p. 130); Craig Harbour, Polunin 1934 (B*) 846*. *West Coast*, Reindeer Cove (Simmons ex Bryhn 1907, p. 130).

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2498a.
3. N. BAFFIN: Arctic Bay, Dutilly 1936 (F,U,A) 1399 1400, Polunin 1936 (F,A,X) 2590a.
4. C. BAFFIN: *no loc.* (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1934 and 1936 (F,A,X,B*) 637* 646* 2604a, Dutilly 1936 (F,U,A) 1468 1475 1476. *Cumberland Sound*, Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 548* 580* 2613b, Dutilly 1936 (F,U,A) 1549b.
5. S. BAFFIN: Cape Dorset, Polunin 1934 (B*) 301* 319*.
7. N. LABRADOR: Lady Job Harbour, Potter 1937 (Z,A) 13; Bowdoin Harbour, Potter 1937 (Z,A) 12; bay just south of Jok-sit Harbour, Potter 1937 (Z,A) 10.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a. Wolstenholme, Polunin 1934 (B*) 237*.
10. W. COAST HUDSON BAY: Chesterfield, Dutilly 1936 (F,U,A) 595 656 657 *c.fr.*, 658 *c.fr.*, 664, Polunin 1936 (F,A,B) 2246a.

250. **Calliergon stramineum** (Brid.) Kindb., Eur. and N.-Amer. Bryin., p. 81 (1897).

Hypnum stramineum Brid.

General Distribution. Circumboreal. Widespread in the mountains of Europe; Siberia, Iceland, Spitsbergen, Jan Mayen, Greenland; in northern North America from the Arctic Archipelago across the continent and southward into the northern United States.

E. Arctic Occurrence. Widespread through the Canadian Eastern Arctic; known previously from several reports in the literature and now from further abundant collections by Polunin, Dutilly, and Soper. Bryhn's statement (1907, p. 130) that this species was "Very rare and collected only at Egedesminde in West Greenland" (*transl.*) makes one wonder under just what name this common species is passing in his report.

1. ELLESMERE: *Grant Land*, Fort Conger (Peary ex Bryhn 1908, p. 22, sub nom. *Hypnum stramineum* var. *patens* Lindb.). *South Coast*, Craig Harbour, Polunin 1934 (B*) 846*.
4. C. BAFFIN: *Cumberland Sound*, Pangnirtung, Soper 1923 and 1924 (O,A) 71 72 195 196 637, Polunin 1934 and 1936 (F,A,X,B*) 578* 581* 2611a 2613b, Dutilly 1936 (F,U,A) 1539 1541 1551 1553 1554.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1211a 2295a. Cape Dorset, Soper 1926 (O,A) 846, Polunin 1936 (F,A,X) 2381a.
7. N. LABRADOR: "Cape Chudleigh" (Chidley) (Bell ex Macoun and Kindberg 1892, p. 244). Burwell, Polunin 1931 and 1936 (F,A,X) 1096a, Dutilly 1936 (F,U,A) 1640 1643 1663 1705 1718; Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1461 1476a. Wolstenholme, Polunin 1936 (F,A,X) 2251 2252.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Mansfield and Nottingham Islands (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 244).
10. W. COAST HUDSON BAY: Chesterfield (Freuchen ex Hesselbo 1937, p. 12), Dutilly 1936 (F,U,A) 592 655 669, Polunin 1936 (F,A,X) 2232a 2246a.

251. **Calliergidium pseudostramineum** (C. Müll.) Grout, Check List, p. 17 (1929).

Hypnum pseudostramineum C. Müll.

General Distribution. Circumboreal. Northern Europe and Asia; northern North America, but apparently not reaching the United States.

E. Arctic Occurrence. Seemingly uncommon.

3. N. BAFFIN: *Pond Inlet,* Mitimatalik (Mathiassen ex Hesselbo 1937, p. 11).
4. C. BAFFIN: Clyde, Polunin 1936 (F,A,X) 2604d.

252. **Calliergonella cuspidata** (Brid.) Loeske, Hedwigia, L, p. 248 (1911).

Hypnum cuspidatum Hedw.

Calliergon cuspidatum Kindb.

General Distribution. Circumboreal. Almost throughout Europe and Asia; across northern North America and south into the United States.

E. Arctic Occurrence. Reported previously (with an interval of more than a century) from two localities in the southernmost part of the Canadian Eastern Arctic, but not found in any of the most recent collections.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). Southampton Island or near (Lyon ex Hooker 1825b, p. 197).

253. **Scorpidium scorpioides** (Hedw.) Limpr., Laubm. III, p. 571 (1899).

Hypnum scorpioides Hedw.

General Distribution. Circumboreal. Through the mountains of Europe; northern Asia, Bear Island, Greenland; throughout northern North America, extending southward into the United States.

E. Arctic Occurrence. Previously reported from the Canadian Eastern Arctic, but from very few localities. The collections of Polunin provide a good deal more information concerning the distribution of this species in the region.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1907, p. 136).
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 651* 666*.
5. S. BAFFIN: *South Coast,* Lake Harbour, Polunin 1934 (B*) 429*; Amadjuak Bay, Soper 1926 (O,A) 292a; Cape Dorset, Polunin 1934 (B*) 301*.
7. N. LABRADOR: Burwell, Polunin 1931 and 1934 (B*) 447* 448*.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay, Polunin 1934 and 1936 (F,A,X,B*) 153* 2293a.

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254. **Camptothecium lutescens** (Hedw.) B.S.G., Bry. Eur. fasc. 52-4, p. 6, Pl. DLVIII (1853).

General Distribution. Throughout central Europe; central Asia, Atlantic Islands, Iceland, Greenland; Arctic America and southward in the western mountains to the United States.

E. Arctic Occurrence. Previously reported from two localities in the southernmost part of the Canadian Eastern Arctic, and collected from two more by Dr. Polunin in 1934.

3. N. BAFFIN: Pond Inlet, Polunin 1934 (B*) 696 (*fide* Sherrin).
5. S. BAFFIN: Lake Harbour, Polunin 1934 (B*) 408* 411* (*fide* Sherrin).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 11).

255. **Tomenthypnum nitens** (Schreb.) Loeske, Deuts. Bot. Monatsschr., XX, p. 82 (1911).

Hypnum nitens Schreb.

Camptothecium nitens (Schreb.) Schimp.

Camptothecium trichoides (Neck.) Broth.

General Distribution. Circumboreal. Through the mountains of Europe and northern Asia; Spitsbergen, Iceland, Greenland (where it reaches its northernmost known limit at Cape Benet, lat. 83° 02′ N. on the north coast); in northern North America from the Arctic Archipelago across the continent and southward into the United States.

E. Arctic Occurrence. A very common species in the Canadian Eastern Arctic where it is known from a number of previous reports and from a large series collected by Polunin, Soper, Dutilly, and others.

1. Ellesmere: *Grant Land,* Floeberg Beach (Feilden ex Mitten 1878, p. 318). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 127). *South Coast,* Fram, Harbour, Musk-ox, Goose, and South Cape Fiords (Simmons ex Bryhn 1906, p. 127). *West Coast, etc.,* 'Isachsens Fiord', Excrementbugten, 'Vendomkap', and Reindeer Cove (Simmons ex Bryhn 1906, p. 127).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 127). *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 127); Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
3. N. Baffin: *Pond Inlet,* Polunin 1936 (F,A,X) 2470a; Mitimatalik (Mathiassen ex Hesselbo 1937, p. 12). *Admiralty Inlet,* Strathcona Sound, Soper 1923 (O,A) 379d; Arctic Bay, Polunin 1936 (F,A,X) 2563a 2590a.
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 464). *Nettilling Lake,* Fox Island, Soper 1925 (O,A) 627 269. Koukdjuak River, Soper 1925 (O,A) 650.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 408 411 1170a 2309a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 12 17 18 60.
6. Melville Peninsula: Igloolik (Freuchen ex Hesselbo 1937, p. 12). Ugli Island (Mathiassen ex Hesselbo 1937, p. 12). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 12).
7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 86).
8. N. Quebec: Wolstenholme, Dutilly 1936 (F,U,A) 791c.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). "Mansfield" (Mansel) Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 189). *Southampton Island,* Duke of York Bay (Mathiassen ex Hesselbo 1937, p. 12); South Bay, Polunin 1934 (B*) 130*, (Sutton ex Jennings 1936, p. 11).

256. **Brachythecium salebrosum** (Hoffm.) B.S.G., Bry. Eur. fasc. 52-5, p. 16, Pl. DXLIX (1853).

Hypnum salebrosum Hoffm.

There are many reports of *B. salebrosum* from the arctic regions, usually as var. *arcticum* Berggr. The species is not, however, a characteristic arctic one, and so I suspect very strongly that most of the records of it from our area, and probably likewise Berggren's var. *arcticum,* belong instead to *Brachythecium albicans* (Hedw.) B.S.G., especially as the specimens are uniformly sterile. As this is a very puzzling and critical group of species, each one of which is possibly only a subspecies or microspecies belonging to a common "form-circle," only a careful study of a large amount of material would allow this problem to be solved. Consequently, the earlier reports of *B. salebrosum* will here be retained with the more recent and reliable ones.

General Distribution. Throughout Europe and Asia; northern Africa, Atlantic Islands, Greenland (where it is said to reach Low Point, lat. 83° 06′ N. on the north coast); northern North America and southward into the United States, especially in the east.

E. Arctic Occurrence. Reported from many localities in the Canadian Eastern Arctic; but, as was noted above, many of the specimens probably belong to *B. albicans.*

(? ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 21, sub nom. var. *arcticum*). *Hayes Sound region,* Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 127, incl. sub nom. var. *arcticum*). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 127, incl. sub nom. var. *arcticum*). *West Coast, etc.,* 'Vendomkap' and Reindeer Cove (Simmons ex Bryhn 1906, p. 127, incl. sub nom. var. *arcticum*).)

(? DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 127, sub nom. var. *arcticum*). *Devon Island,* 'Havhestberget' and Castle Island (Simmons ex Bryhn 1906, p. 127, incl. sub nom. var. *arcticum*); Philpots Island (Philpotts ex Dickie 1871, p. 33); Beechey Island (Lyall ex Hooker 1857, p. 120).)

(? N. BAFFIN: Navy Board Inlet (Lyall ex Hooker 1857, p. 120).)

4. C. BAFFIN: Koukdjuak River, Soper 1925 (O,A) 698.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203, incl. sub nom. var. *arcticum*).

257. **Brachythecium albicans** (Hedw.) B.S.G., Bry. Eur. fasc. 52-4, p. 19, Pl. DLIII (1853).

As indicated under *B. salebrosum,* this species is probably the arctic representative of the latter. Almost without exception the material was sterile, and apparently dioicous. The uniformly entire leaves seem to me to be a characteristic that lends additional weight to this identification.

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Greenland; in northern North America ranging from the Arctic Archipelago and Labrador to Alaska, being especially common in the Rocky Mountains.

E. Arctic Occurrence. Not previously reported from the Canadian Eastern Arctic, but probably not uncommon, as there is a full series of specimens in the collections of Polunin, Soper, and others.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2509a 2523a.
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2562a.
4. C. BAFFIN: *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2613c. *Nettilling Lake,* Fox Island, Soper 1925 (O,A) 628c.
5. S. BAFFIN: *Frobisher Bay,* Point Brewster, Potter 1937 (Z,A) 19 *c.fr. South Coast,* Cape Dorset, Polunin 1936 (F,A,X) 2381a. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 17 61.
6. MELVILLE PENINSULA: Barrow River (Parry ex Hooker 1825a, p. 414, sub syn. *Hypnum albicans*).
7. N. LABRADOR: Burwell, Polunin 1934 (B*) 915*.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1419a. Wolstenholme, Polunin 1936 (F,A,X) 2251a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 10), Polunin 1936 (F,A,X) 2294a.

258. **Brachythecium acutum** (Mitt.) Sull., Icon. Musc. Suppl., p. 99, Pl. LXXV (1874).

General Distribution. Known only in North America, where it extends across the northern part of the continent and southward into the northern United States.

E. Arctic Occurrence. There is only one report of this species from the Canadian Eastern Arctic, and that from the southernmost part. In spite of the fact that the identification was made by Kindberg, whose determinations were often very unreliable, I am inclined to include the species here, as no great extension is entailed in the known range.

(? Islands in Hudson, etc., Bays: "Mansfield" (Mansel) Island (Bell ex Macoun and Kindberg 1892, p. 193).

259. **Brachythecium rivulare** B.S.G., Bry. Eur. fasc. 52-4, p. 13, Pl. DXLVI (1853).

General Distribution. Circumboreal. Throughout Europe and Asia; Greenland; in northern North America extending across the continent and south into the United States.

E. Arctic Occurrence. Evidently rare.

7. N. Labrador: Cape Chudleigh (Chidley) (Bell ex Macoun and Kindberg 1892, p. 200, sub syn. *Hypnum rivulare*).

260. **Brachythecium plumosum** (Sw.) B.S.G., Bry. Eur. fasc. 52-4, p. 4, Pl. DXXXVII (1853).

General Distribution. Circumboreal; also in the Southern Hemisphere. Throughout Europe and Asia; northern Africa, Madeira, Spitsbergen, Iceland, Greenland, New Zealand; in northern North America extending from the Arctic Archipelago across the continent and southward through the eastern United States.

E. Arctic Occurrence. Reported from a number of localities in the Canadian Eastern Arctic, all as a result of collections made by the Fifth Thule Expedition.

3. N. Baffin: Cape Griffith (Mathiassen ex Hesselbo 1937, p. 12).
6. Melville Peninsula: Igloolik (Freuchen ex Hesselbo 1937, p. 12). Pingerqalik (Mathiassen ex Hesselbo 1937, p. 12). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 12).
9. Islands in Hudson, etc., Bays: Southampton Island (Mathiassen ex Hesselbo 1937, p. 12).
10. W. Coast Hudson Bay: Depot Island (Freuchen ex Hesselbo 1937, p. 12).

261. **Cirriphyllum cirrosum** (Schwaegr.) Grout, Bull. Torrey Bot. Club, XXV, p. 223 (1898).

Hypnum cirrosum Schwaegr.

Brachythecium cirrosum Schimp.

Eurhynchium cirrosum Husnot

General Distribution. Circumboreal. Arctic and alpine Europe and Asia, Spitsbergen, Greenland; Arctic America and south in the western mountains to Colorado.

E. Arctic Occurrence. Previously reported from several widely separated localities in the Canadian Eastern Arctic.

1. ELLESMERE: *Lady Franklin Bay,* Discovery Harbour (Hart ex Mitten 1878, p. 319). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 128).
2. DEVON, ETC., ISLANDS: Beechey Island (Lyall ex Hooker 1857, p. 120).
3. N. BAFFIN: *Bylot Island,* Tuarpat (Freuchen ex Hesselbo 1937, p. 13). *Eclipse Sound,* Quilalukan (Freuchen ex Hesselbo 1937, p. 13).
6. MELVILLE PENINSULA: Repulse Bay (Olsen ex Hesselbo 1937, p. 13).
9. ISLANDS IN HUDSON, ETC., BAYS: Southampton Island, Low 1904 (O,A) 360.

262. **Eurhynchium pulchellum** (Hedw.) Jennings, Man. Mosses W. Penn., p. 350 (1913).

E. strigosum (Hoffm.) B.S.G.

General Distribution. Circumboreal. Throughout Europe and Asia, northern Africa, Atlantic Islands, Siberia; in North America throughout Canada and the northern United States.

E. Arctic Occurrence. Reported from a very few but widely separated localities in the Canadian Eastern Arctic. Only one specimen was found in Dr. Polunin's extensive collections.

1. ELLESMERE: *Hayes Sound region,* Bedford Pim Island (Simmons ex Bryhn 1906, p. 127). *South Coast,* Fram Fiord (Simmons ex Bryhn 1906, p. 127).
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2501a.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 13).

263. **Eurhynchium diversifolium** (Schleich.) B.S.G., Bry. Eur. fasc. 57-61, p. 4, Pl. DXX (1854).

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Spitsbergen, Greenland; in northern North America extending from Ellesmere to the United States, chiefly in the western mountains but reaching Michigan and Ohio.

E. Arctic Occurrence. Reported from a very few localities in the Canadian Eastern Arctic.

1. ELLESMERE: Goose Fiord (Simmons ex Bryhn 1906, p. 128).
3. N. BAFFIN: "Uglularssuit" (Freuchen ex Hesselbo 1937, p. 13).
6. MELVILLE PENINSULA: Igloolik (Freuchen ex Hesselbo 1937, p. 13). Ugli Island (Mathiassen ex Hesselbo 1937, p. 13). Repulse Bay (Olsen ex Hesselbo 1937, p. 13).

ENTODONTACEAE

264. **Pterigynandrum filiforme** Hedw., Sp. Musc. Frond., p. 81 (1801).

Pterogonium filiforme Schwaegr.

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Greenland; in northern North America extending across the continent and southward to the northern United States.

E. Arctic Occurrence. Previously reported from two widely separated localities in the Canadian Eastern Arctic, and collected by Polunin and Soper in two further divisions of the region.

1. ELLESMERE: 'Vendomkap' (Simmons ex Bryhn 1906, p. 125).
5. S. BAFFIN: Cape Dorset, Soper 1936 (O,A) 676a.
6. MELVILLE PENINSULA: South shore of Fury and Hecla Strait (Parry ex Hooker 1825a, p. 417).
7. N. LABRADOR: Burwell, Polunin 1936 (F,A,X) 1082a.

265. **Orthothecium intricatum** (Hartm.) B.S.G., Bry. Eur. fasc. 48, p. 4, Pl. CDLXII (1851).

Holmgrenia intricata Lindb.

General Distribution. Circumboreal. In alpine and Arctic Europe; Asia, Greenland; northern North America, where it extends from the Arctic Archipelago but appears to be most common in the western mountains.

E. Arctic Occurrence. Previously reported only from the northernmost part of the Canadian Eastern Arctic, but represented from two other divisions of the region in the collections of Polunin and Soper.

1. Ellesmere: *Hayes Sound region*, near Fort Juliane (Simmons ex Bryhn 1906, p. 125). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 125).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
5. S. Baffin: Camp Kungovik, Soper 1929 (O,A) 19g.

266. **Orthothecium strictum** Lorentz, Moosstud., p. 122, Pl. V (1864).

Holmgrenia stricta Lorentz

Stereodon rubellus Mitt.

Orthothecium rubellum Kindb.

O. binervulum Molendo

General Distribution. Arctic and alpine Europe and Asia; Franz Joseph Land, Spitsbergen; Greenland at Cape Benet, lat. 83° 02′ N.; Arctic America, extending south in the Rocky Mountains.

E. Arctic Occurrence. Known from several localities in the northern part of the Canadian Eastern Arctic.

1. Ellesmere: *Grant Land,* Lincoln Bay and Wrangel Bay (Wolf ex Bryhn 1908, p. 21); Fort Conger (Peary ex Bryhn 1908, p. 21); Musk-ox Bay (Hart ex Mitten 1878, p. 319). *Hayes Sound region,* Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 126). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 126). *West Coast, etc.*, 'Vendomkap' and Reindeer Cove (Simmons ex Bryhn 1906, p. 126).
2. Devon, etc., Islands: North Kent Island; 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 126).
4. C. Baffin: Cape Adair and Cape Searle (Taylor ex Dickie 1869, p. 464, cf. Mitten 1865, p 40).

267. **Orthothecium chryseum** (Schwaegr.) B.S.G., Bry. Eur. fasc. 48, p. 3, Pl. CDLXI (1851).

Holmgrenia chrysea Lindb.

Hypnum chryseum Schwaegr.

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Spitsbergen, Iceland, Greenland (where it reaches its northern limit at Cape Benet, lat. 83° 02′ N. on the north coast); Arctic America and southward in the Rocky Mountains to Montana and Colorado.

E. Arctic Occurrence. Reported many times previously from the Canadian Eastern Arctic, and collected more recently from still further localities by Polunin, Soper, and Dutilly.

1. Ellesmere: common—numerous records from almost all localities—cf. Mitten (1878, pp. 317-9), Bryhn (1906, p. 125, and 1908, p. 21), and Harmsen and Seidenfaden (1932, p. 36); also such recent collections as Craig Harbour, Polunin 1934 and 1936 (F,A,X,B*) 825* 826* 872* 2487a, Dutilly 1936 (F,U,A) 1228 1232b.

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 125). *Devon Island*, 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1906, p. 125); Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1936 (F,A,X) 2498a; Beechey Island (Lyall ex Hooker 1857, p. 120, cf. Mitten 1865, p. 39), Soper 1923 (O,A) 318c.
3. N. Baffin: *Pond Inlet* (Lyall ex Hooker 1857, p. 120, cf. Mitten 1865, p. 39), Soper 1923 (O,A) 518; Mitimatalik (Mathiassen ex Hesselbo 1937, p. 12). *Admiralty Inlet*, Strathcona Sound, Soper 1923 (O,A) 379 380; Arctic Bay, Polunin 1936 (F,A,X) 2562c 2563a 2590b.
4. C. Baffin: Koukdjuak River, Soper 1925 (O,A) 698b.
5. S. Baffin: *South Coast*, Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 389* 1170a; Cape Dorset, Soper 1926 (O,A) 677a. *West Coast*, Camp Kungovik, Soper 1929 (O,A) 60 62.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203). *Southampton Island*, South Bay, Dutilly 1936 (F,U,A) 767, Polunin 1936 (F,A,X) 2293a.

268. **Orthothecium rufescens** (Dicks.) B.S.G., Bry. Eur. fasc. 48, p. 3, Pl. CDLX (1851).

Holmgrenia rufescens Lindb.

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Arctic America.

E. Arctic Occurrence. Previously reported from only two localities in the Canadian Eastern Arctic, but collected in three more by Polunin and Dutilly.

1. Ellesmere: *South Coast*, Craig Harbour, Polunin 1934 (B*) 826*, Dutilly 1936 (F,U,A) 1271a; Harbour and Musk-ox Fiords (Simmons ex Bryhn 1906, p. 125).
3. N. Baffin: Pond Inlet, Polunin 1934 (B*) 695* 696*. *Admiralty Inlet*, Arctic Bay, Polunin 1936 (F,A,X) 2553a 2590b.
4. C. Baffin: Cape Searle (Taylor ex Dickie 1869, p. 464).

269. **Orthothecium acuminatum** Bryhn, Rept. 2nd. Arct. Exped. "Fram", No. 11, p. 126 (1906).

Holmgrenia acuminata Grout

General Distribution. Still known only from the original localities in Ellesmere Island cited by Bryhn.

E. Arctic Occurrence. Evidently limited.

1. Ellesmere: *Hayes Sound region*, Bedford Pim Island (Simmons ex Bryhn 1906, p. 126). *South Coast*, Goose Fiord (Simmons ex Bryhn 1906, p. 126). *West Coast*, Reindeer Cove (Simmons ex Bryhn 1906, p. 126).

270. **Entodon** sp.

The North American species *Entodon compressus* (Hedw.) C. Müll., which is limited in its distribution to the central and eastern United States, has been reported from Akpatok Island (cf. Polunin 1934a, p. 203). *E. compressus* can be safely identified only when in fruit, as its critical diagnostic features are sporophytic, but Polunin's specimen is not noted as fruiting. In addition, we have the anomaly of distribution, so it seems necessary to omit this species from the list. I should suggest that the specimen is probably a depauperate phase of *E. cladorrhizans* (Hedw.) C. Müll., which is known to extend northward well into Canada.

9. Islands in Hudson, etc., Bays: Akpatok Island (Polunin 1934a, p. 203, sub nom. *Entodon compressum*).

271. **Pleurozium schreberi** (Willd.) Mitten, Jour. Linn. Soc., Bot., XII, p. 537 (1869).

Hypnum schreberi Willd.

Calliergonella schreberi Grout

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Greenland; northern North America and south to Virginia in the eastern mountains; Andes of Colombia and Ecuador.

E. Arctic Occurrence. Although this species is not characteristically an arctic one, it has been reported from two localities in the Canadian Eastern Arctic, and is among the collections made by Dr. Polunin.

6. MELVILLE PENINSULA: Barrow River (Parry ex Hooker 1825a, p. 413).
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 210*.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 13).

272. **Plagiothecium denticulatum** (Hedw.) B.S.G., Bry. Eur. fasc. 48, p. 12, Pl. DI (1851).

Hypnum denticulatum Hedw.

General Distribution. Circumboreal. Throughout Europe and Asia; Spitsbergen, Iceland, Greenland; widespread in northern North America and extending southward well into the United States, especially in the mountains.

E. Arctic Occurrence. Although not a truly arctic species, this has been reported from one locality in the Canadian Eastern Arctic, and, as it reaches rather high latitudes in one or another of its extremely variable forms, it is retained in our list.

6. MELVILLE PENINSULA: Neerlo Nakto (Parry ex Hooker 1825a, p. 413).

HYPNACEAE

273. **Pylaisia suttoni** Jennings, Mem. Carnegie Mus., XII, 3, p. 12, Pl. XXX (1936).

General Distribution. This species is still known only from the type locality, South Bay in Southampton Island, where it was collected in 1930 by Sutton (cf. Jennings 1936, p. 12).

9. ISLANDS IN HUDSON, ETC., BAYS: Southampton Island (Sutton ex Jennings 1936, p. 12).

274. **Hypnum fastigiatum** Brid., Bryol. Univ. II, p. 620 (1827).

General Distribution. Circumboreal. Alpine and Arctic Europe; northern North America, ranging southward in the western mountains to the northern United States.

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic.

1. ELLESMERE: Craig Harbour, Dutilly 1936 (F,U,A) 1234c.

275. **Hypnum reptile** Michx., Fl. Bor. Am., p. 315 (1803).

General Distribution. Circumboreal. Throughout Europe and Asia; Greenland; in northern North America extending from the Arctic Archipelago south in the mountains to Arizona in the west and North Carolina in the east.

E. Arctic Occurrence. Reported previously from two widely separated localities in the Canadian Eastern Arctic, and collected again by Dr. Polunin.

2. DEVON, ETC., ISLANDS: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1936 (F,A,X) 2501a.
4. C. BAFFIN: "rare, only in Cumberland Sound" (Taylor ex Dickie 1869, p. 465).

276. **Hypnum bambergeri** Schimp., Syn., p. 698 (1860).

Stereodon bambergeri Lindb.

Stereodon circularis Mitten

General Distribution. Circumboreal. Alpine and Arctic Europe; Novaya Zemlya, Spitsbergen, Bear Island, Greenland (where it reaches Gunnar Andersson Valley, lat. 82° 28′ N. on the north coast); Arctic America and southward in the western mountains to British Columbia.

E. Arctic Occurrence. Although this species has been reported from a number of localities in the Canadian Eastern Arctic, several of these reports have, according to Grout (1932, p. 131), been based on misidentifications (mostly by Bryhn). For this reason, only those specimens that have Grout's approval are cited here, in addition to the specimens collected by Dr. Polunin.

2. DEVON, ETC., ISLANDS: Beechey Island (Lyall ex Mitten 1865, p. 42); "Wellington Channel" (Lyall ex Mitten 1865, p. 42).
3. N. BAFFIN: Pond Inlet, Polunin 1936 (F,A,X) 2470a. *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2589a.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1170a 2309a.

277. **Hypnum vaucheri** Lesq., Cat. Mouss. Suiss., p. 48 (1845).

Stereodon vaucheri Lindb.

General Distribution. Circumboreal. Arctic and alpine Europe and Asia; Spitsbergen, Bear Island, Greenland; in northern North America ranging from the Arctic Archipelago to the Yukon and southward to the northern United States.

E. Arctic Occurrence. Previously reported from several localities in the northern part of the Canadian Eastern Arctic.

1. ELLESMERE: *Grant Land,* Lincoln Bay (Wolf ex Bryhn 1908, p. 24). *Hayes Sound region,* near Fort Juliane (Simmons ex Bryhn 1907, p. 135). *South Coast,* Musk-ox, South Cape, and Goose Fiords (Simmons ex Bryhn 1907, p. 135). 'Vendomkap' (Simmons ex Bryhn 1907, p. 135).
2. DEVON, ETC., ISLANDS: North Kent Island and 'Havhestberget' (Simmons ex Bryhn 1907, p. 135).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2589a.

278. **Hypnum cupressiforme** Hedw., Sp. Musc. Frond., p. 291 (1801).

General Distribution. Very widely distributed, being almost cosmopolitan in the cooler parts of the world. Throughout Europe and Asia; northern, southern, and eastern Africa; Atlantic Islands, Andes of South America, Fuegia, Tasmania, and New Zealand; in North America extending from the Arctic Archipelago southward to the Gulf of Mexico.

E. Arctic Occurrence. This is apparently the first report of the species from the Canadian Eastern Arctic.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Soper 1923 (O,A) 289b.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay, Polunin 1936 (F,A,X) 2294a.

279. **Hypnum hamulosum** B.S.G., Bry. Eur. fasc. 57-61, p. 20, Pl. DXC (1854).

Stereodon hamulosus Lindb.

General Distribution. Circumboreal. Alpine and Arctic Europe; Siberia, Spitsbergen, Greenland; in northern North America ranging from the Arctic Archipelago to Alaska and southward to Utah.

E. Arctic Occurrence. Reported from several widely separated localities in the Canadian Eastern Arctic.

1. ELLESMERE: *Grant Land,* Fort Conger (Peary ex Bryhn 1908, p. 24). *Hayes Sound region,* Skräling Island, Lastraea Valley, and Cocked Hat Island (Simmons ex Bryhn 1907, p. 136). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 136).
2. DEVON, ETC., ISLANDS: Philpots Island (Philpotts ex Dickie 1871, p. 33).
4. C. BAFFIN: "Davis Straits" *no loc.* but "east and west sides, frequent" (Taylor ex Dickie 1869, p. 465).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

280. **Hypnum callichroum** Brid., Bryol. Univ. II, p. 631 (1827).

General Distribution. Circumboreal. Alpine and Arctic Europe; Siberia; Greenland; in northern North America extending from the Arctic Archipelago to Alaska and Labrador.

E. Arctic Occurrence. Apparently uncommon.

4. C. BAFFIN: Pangnirtung, Soper 1923 (O,A) 648.
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 13).

281. **Hypnum revolutum** (Mitt.) Lindb., Hedwigia, VII, p. 108 (1868).

Stereodon revolutus Mitten

Stereodon plicatilis Mitten

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Spitsbergen, Greenland (where it reaches its northernmost known limit at Low Point, lat. 83° 06′ N. on the north coast); in North America ranging from the Arctic Archipelago southward in the western mountains to Arizona and California.

E. Arctic Occurrence. Previously reported from many localities in the Canadian Eastern Arctic, and collected in still others by Dr. Polunin.

1. ELLESMERE: common—numerous records from almost all localities—cf. Mitten 1878, p. 319), Bryhn (1907, p. 135, and 1908, p. 24); also such recent collections as Craig Harbour, Polunin 1936 (F,A,X) 2475 2476a.
2. DEVON, ETC., ISLANDS: *Devon Island,* 'Havhestberget', Devils Isle, and Castle Island (Simmons ex Bryhn 1907, p. 135). Dundas Harbour, Polunin 1934 and 1936 (F,A,X,B*) 741* 2501a 2523a.
3. N. BAFFIN: Igluluarsuit (?="Uglularssuit"—Freuchen ex Hesselbo 1937, p. 12).

282. **Hypnum dieckii** Ren. & Card., Bot. Centralbl., XLIV, p. 423 (1890).

General Distribution. A North American species occurring in the western mountains from Alaska southward to the northern United States; new to the Arctic Archipelago.

E. Arctic Occurrence. This is the first report of the species from the Canadian Eastern Arctic.

3. N. BAFFIN: *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2588a.

283. **Breidleria arcuata** (Hedw.) Loeske, Studien, p. 172 (1910).

Hypnum arcuatum Hedw.

General Distribution. Circumboreal. Throughout Europe and Asia; Greenland; in North America ranging from the Arctic Archipelago to Florida.

E. Arctic Occurrence. This is apparently the first report of the species from the Canadian Eastern Arctic.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2509a.
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F,A,X) 2562b.

284. **Breidleria pratensis** (Koch) Loeske, Studien, p. 172 (1910).

Hypnum pratense Koch

General Distribution. Circumboreal. Central and northern Europe; Asia, Spitsbergen, Greenland; in Arctic America extending across the continent and southward to the northern United States.

E. Arctic Occurrence. This is apparently the first report of the species from the Canadian Eastern Arctic.

2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1936 (F,A,X) 2509a.

285. **Isopterygium pulchellum** (Dicks.) Broth., Laubm. Fennosk., p. 548 (1923).

Plagiothecium pulchellum B.S.G.

General Distribution. Circumboreal. Through the mountains of Europe; Siberia, Spitsbergen, Iceland, Greenland (where it reaches its northern limit at Low Point, lat. 83° 06′ N. on the north coast); Arctic America and southward to the northern United States.

E. Arctic Occurrence. Already reported from many localities in the Canadian Eastern Arctic.

1. ELLESMERE: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 21). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford *c.fr.*, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 128). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 128). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 128).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 128). *Devon Island,* Castle Island (Simmons ex Bryhn 1906, p. 128); "between Beechey Island and Northumberland Sound" (Lyall ex Hooker 1857, p. 120, sub syn. *Hypnum pulchellum*).
4. C. BAFFIN: Cape Adair, Cape Searle, and Cumberland Sound (Taylor ex Dickie 1869, p. 464).
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1170a.
6. MELVILLE PENINSULA: Igloolik (Freuchen ex Hesselbo 1937, p. 12). *Vansittart Island* and Danish Island (Freuchen ex Hesselbo 1937, p. 12).

286. **Isopterygium striatellum** (Brid.) Loeske, Studien, p. 168 (1910).

General Distribution. Circumboreal. Alpine and Arctic Europe; northern Asia, Greenland; Arctic America and southward to the northern United States.

E. Arctic Occurrence. This is apparently the first report of the species from the Canadian Eastern Arctic.

5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 2309a.

287. **Ctenidium procerrimum** (Mol.) Broth., Acta Soc. Sci. Fenn., XIX, 12, p. 125 (1892).

Pseudostereodon procerrimum (Mol.) Fleisch.

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Arctic America.

E. Arctic Occurrence. Rather limited.

1. Ellesmere: South Coast, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 136).
2. Devon, etc., Islands: 'Havhestberget' (Simmons ex Bryhn 1907, p. 136).

Rhytidiaceae

288. **Rhytidium rugosum** (Hedw.) Kindb., Laubm. Schwed. u. Norv., p. 15 (1883).

Hylocomium rugosum De Not.

General Distribution. Circumboreal. Throughout the mountains of Europe and Asia; north Africa, Spitsbergen, Greenland; in North America extending from the Arctic Archipelago across the continent and south into the United States.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic from several recent reports as well as from specimens collected by Polunin and Soper.

2. Devon, etc., Islands: Dundas Harbour, Polunin 1936 (F,A,X) 2501a.
3. N. Baffin: *Pond Inlet,* Polunin 1936 (F,A,X) 2470a; Albert Harbour (Freuchen ex Hesselbo 1937, p. 12); Igluluarsuit (Freuchen ex Hesselbo 1937, p. 12).
4. C. Baffin: Pangnirtung, Soper 1924 (O,A) 194.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

Hylocomiaceae

289. **Hylocomium splendens** (Hedw.) B.S.G., Bry. Eur. fasc. 49-52, p. 5, Pl. CDLXXXVII (1852).

Hypnum splendens Hedw.

Hylocomium proliferum Lindb.

Most of the arctic specimens of this species are very much reduced in size, pale in colour, and show no proliferation of the stems. The whole appearance of the plant is very little like that of the typical form of temperate regions, but rather like *Pleurozium schreberi* (q.v.). In fact, it would be very easy to confuse the two plants if it were not for the well-developed paraphyllia of the *Hylocomium.* However, progressing from north to south, the specimens increase in size, and in Labrador well-developed intermediate forms are found, so that *Hylocomium alaskanum* (Lesq. & James) Kindb., to which these specimens were first referred, but which is evidently not a good species, stands out as a mere convenient category in which to place the most reduced arctic specimens.

General Distribution. Circumboreal. Throughout Europe and Asia; northern Africa, Atlantic Islands, Spitsbergen, Greenland (where it reaches its northernmost known limit at Low Point, lat. 83° 06′ N. on the north coast); in northern North America ranging from the Arctic Archipelago southward to California in the western mountains and to North Carolina in the east.

E. Arctic Occurrence. The previous reports of this species from several widely separated localities in the Canadian Eastern Arctic are well supplemented by the very large series of specimens collected by Polunin, Dutilly, and Soper.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Eskimopolis, and Twin Glacier Valley (Simmons ex Bryhn 1907, p. 136). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1907, p. 136). *West Coast,* Lands End (Simmons ex Bryhn 1907, p. 136).
2. Devon, etc., Islands: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1936 (F,A,X) 2498b 2523a.
3. N. Baffin: *Pond Inlet,* Polunin 1934 (B*) 669; Mitimatalik (Mathiassen ex Hesselbo 1937, p. 12); Albert Harbour (Freuchen ex Hesselbo 1937, p. 12). *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2563a. Gifford Fiord (Mathiassen ex Hesselbo 1937, p. 12).
4. C. Baffin: *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 71 72, Polunin 1934 and 1936 (F,A,X,B*) 541* 550* 2611a 2613a. *Nettilling Lake,* Fox Island, Soper 1925 (O,A) 629a; Koukdjuak River, Soper 1925 (O,A) 650.
5. S. Baffin: *South Coast,* Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 408* 411* 442* 1170a 1211a 1233a; Cape Dorset, Soper 1926 (O,A) 558a, Polunin 1934 (B*) 303*. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 11 13 15 16.
7. N. Labrador: *Chidley Peninsula* (MacGregor ex Anon. 1907, p. 86); Burwell, Polunin 1934 (B*) 909*; Bowdoin Harbour, Potter 1937 (Z,A) 12.
8. N. Quebec: Diana Bay, Ney and Courtright 1936 (F,A,X) 2407a. Wakeham Bay, Polunin 1936 (F,A,X) 1419a. Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 189* 2252a, Dutilly 1936 (F,U,A) 791d.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

POLYTRICHACEAE

290. **Oligotrichum hercynicum** (Hedw.) Lam. & DC., Fl. Franç. (ed. 3), II, p. 492 (1805).

O. incurvum (Huds.) Lindb.

General Distribution. Circumboreal. Alpine and Arctic Europe and Asia; Arctic America, particularly in the western part.

E. Arctic Occurrence. This species was reported from our area by Dickie (*l.c.*) more than half a century ago, and, so far as I am aware, has not been collected since. However, as it is not common and is moreover a typical arctic species, Dickie's report is regarded as perfectly plausible and hence is tentatively accepted.

(? C. Baffin: *Cumberland Sound,* Kekerten (Taylor ex Dickie 1869, p. 464).

291. **Psilopilum laevigatum** (Wahlenb.) Lindb., Öfv. K. Vet.-Akad. Förh. Stockholm, XVIII, p. 190 (1861).

P. arcticum Brid.

Oligotrichum laevigatum B.S.G.

General Distribution. Circumboreal. Arctic Europe and Asia; Spitsbergen, Iceland, Greenland; Arctic America.

E. Arctic Occurrence. Previously reported from several localities in the Canadian Eastern Arctic, and brought back from others by Polunin and Dutilly.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 122). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 122).
3. N. Baffin: Arctic Bay, Polunin 1936 (F,A,X) 2590a *c.fr.*
4. C. Baffin: Clyde, Polunin 1934 (B*) 630*, Dutilly 1936 (F,U,A) 1473 *c.fr.* *Cumberland Sound, c.fr.* (Taylor ex Dickie 1869, p. 464).

292. **Phylocrya aspera** Hag. & Jens., Medd. om Grønland, XV, p. 388 (1897).

Lyellia aspera Frye

General Distribution. Known only from the type locality in East Greenland (Scoresby Sound) and from the station in Baffin Island cited below.

E. Arctic Occurrence.

4. C. BAFFIN: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 35).

293. **Pogonatum capillare** (Richard) Brid., Bryol. Univ. II, p. 127 (1827).

General Distribution. Circumboreal. Northern Europe and Asia; Spitsbergen, Iceland, Greenland; in North America extending from Alaska and the Arctic Archipelago southward into the northern United States.

E. Arctic Occurrence. This is only the second report of the species from the Canadian Eastern Arctic.

1. ELLESMERE: Craig Harbour, Polunin 1934 (B*) 829*.
4. C. BAFFIN: *Cumberland Sound* (Taylor ex Dickie 1869, p. 464, sub. nom. *Pogonatum dentatum* Brid.).

294. **Pogonatum urnigerum** (Hedw.) P. de Beauv., Prodr., p. 85 (1805).

Polytrichum urnigerum Hedw.

General Distribution. Circumboreal. Through Europe and Asia; northern Africa, Atlantic Islands, Greenland, West Indies; in northern North America ranging from Alaska and the Arctic Archipelago southward into the United States.

E. Arctic Occurrence. Previously reported only once from the Canadian Eastern Arctic, from the southernmost part.

1. ELLESMERE: Craig Harbour, Polunin 1934 (B*) 833*.
2. DEVON, ETC., ISLANDS: Dundas Harbour, Polunin 1934 (B*) 748*.
3. N. BAFFIN: Pond Inlet, Bazin 1934 (M*).
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 235*.
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203).

295. **Polytrichum alpinum** Hedw., Sp. Musc. Frond., p. 92 (1801).

Pogonatum alpinum Röhl

General Distribution. Circumpolar; also in the Southern Hemisphere. Throughout the mountains of Europe and Asia; Spitsbergen, Iceland, Greenland (where it reaches its northernmost limit at Low Point, lat. 83° 06′ N. on the north coast); throughout northern North America from the Arctic Archipelago to Alaska and south to Labrador and the United States.

E. Arctic Occurrence. This is one of the best known mosses in the Canadian Eastern Arctic, as it has been reported many times and from many localities. Furthermore, it is exceedingly well represented among the collections of Polunin, Soper, Dutilly, and Potter.

1. ELLESMERE: *North Coast,* Floeberg Beach (Feilden ex Mitten 1878, p. 318). *Hayes Sound region,* Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, Brevoort Island (Simmons ex Bryhn 1906, p. 122); Gale Point, Hayes 1861 (P). *South Coast,* Fram, Harbour, South Cape.

and Goose Fiords (Simmons ex Bryhn 1906, p. 122); Craig Harbour, Polunin 1934 (B*). *West Coast, etc.*, 'Isachsens Fiord', 'Vendomkap', Excrementbugten, and Reindeer Cove (Simmons ex Bryhn 1906, p. 122).

2. Devon, etc., Islands: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Cape Osborne (Walker ex Hooker 1861, p. 85); Dundas Harbour, Soper 1923 (O,A) 289 291, Polunin 1934 and 1936 (F,A,X,B*) 748* 783* 2501a.
3. N. Baffin: *Admiralty Inlet,* Arctic Bay, Polunin 1936 (F,A,X) 2562a; Saputit (Mathiassen ex Hesselbo 1937, p. 16).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 464); Clyde, Polunin 1934 and 1936 (F,A,X,B*) 591*, 2591a *c.fr.*, 2604a *c.fr. Cumberland Sound,* Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 529* 552* 2611a 2613a *c.fr.*
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1170 2295a. Cape Dorset, Soper 1926 (O,A) 671 839.
6. Melville Peninsula: Itividleriaq (Mathiassen and Bangsted ex Hesselbo 1937, p. 16). Vansittart Island (Freuchen ex Hesselbo 1937, p. 16).
7. N. Labrador: Burwell, Polunin 1931 and 1936 (F,A,X,B*) 1082a.
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1419a.
9. Islands in Hudson, etc., Bays: Southampton Island (Freuchen ex Hesselbo 1937, p. 16).

var. **septentrionale** Röhl, Ann. Wett. Ges., III, p. 266 (1812).

General Distribution. Northern Europe and Asia; Greenland; Arctic America and southward in the mountains to the northern United States.

E. Arctic Occurrence. Fairly widespread in the insular parts.

4. C. Baffin: Clyde, Polunin 1936 (F,A,X) 2604a *c.fr.* Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 34).
5. S. Baffin: Lake Harbour, Polunin 1936 (F,A,X) 1170a *c.fr.*
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B*, cf. Polunin 1934a, p. 203, sub nom. *Pogonatum septentrionale*).

var. **brevifolium** C. Müll., Syn. Musc. I, p. 211 (1849).

P. alpinum var. *simplex* Schimp.

General Distribution. Northern Europe and Asia; Iceland, Greenland; Arctic America and southward into the United States, especially in the western mountains.

E. Arctic Occurrence. Widespread, at least in the insular regions.

1. Ellesmere: "var. *simplex* occurs frequently" *transl.* (Bryhn 1906, p. 122).
5. S. Baffin: Point Brewster, Potter 1937 (Z,A) 19 20 *c.fr.*
7. N. Labrador: Lady Job Harbour, Potter 1937 (Z,A) 13; Bowdoin Harbour, Potter 1937 (Z,A) 12 *c.fr.*
9. Islands in Hudson, etc., Bays: Digges Island (Bell 1884, p. 46, cf. Macoun and Kindberg 1892, p. 152).

var. **arcticum** Wahlenb., Fl. Lapp., p. 346 (1812).

General Distribution. Circumboreal. Mountains of Europe and Asia; Greenland; in northern North America ranging from Ellesmere and Alaska southward to the northern United States.

E. Arctic Occurrence. Apparently infrequent.

1. Ellesmere: Fort Conger (Peary ex Bryhn 1908, p. 20).

296. **Polytrichum fragile** Bryhn, Rept. 2nd Norw. Arctic Exped. "Fram", No. 11, p. 122 (1906).

General Distribution. Still known only from the original localities in Greenland and Ellesmere Island.

E. Arctic Occurrence. Evidently limited.

1. Ellesmere: *Hayes Sound region,* Cape Viele, Lastraea Valley, Cocked Hat Island, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 122).

297. **Polytrichum yukonense** Card. & Thér., Proc. Wash. Acad. Sci., IV, p. 329 (1902).

General Distribution. Previously known only from the type locality in Alaska, and from Labrador. Now may be reported one new locality in Labrador and two in northernmost Quebec.

E. Arctic Occurrence. Known only from the eastern half of the extreme south.

7. N. LABRADOR: Burwell, Dutilly 1936 (F,U,A) 916.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a. Wolstenholme, Polunin 1936 (F,A,X) 2252b.

298. **Polytrichum jensenii** Hagen, Medd. om Grønland, XV, p. 444 (1898).

General Distribution. Circumboreal. Arctic Europe, Spitsbergen, Greenland; northern North America and southward into the United States, but only in the western mountains.

E. Arctic Occurrence. This species, collected in three places by Dr. Polunin in 1936, is an addition to the flora of the Canadian Eastern Arctic.

4. C. BAFFIN: Clyde River, Polunin 1936 (F,A,X) 2604a.
5. S. BAFFIN: Lake Harbour, Polunin 1936 (F,A,X) 1170a.
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.

299. **Polytrichum commune** Hedw., Sp. Musc. Frond., p. 88 (1801).

General Distribution. Nearly cosmopolitan. Widespread throughout the cooler parts of the world; known from every continent.

E. Arctic Occurrence. This is not a typically arctic species, but it is nevertheless surprising that the present should be the first report of it from any part of the Canadian Eastern Arctic.

8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F,A,X) 1476a.

300. **Polytrichum norvegicum** Hedw., Sp. Musc. Frond., p. 99 (1801).

P. septentrionale P. de Beauv., *non* Brid.

P. sexangulare Flörke

General Distribution. Circumboreal. Alpine and Arctic Europe; Arctic Asia, Spitsbergen, Iceland, Greenland; Arctic America.

E. Arctic Occurrence. This species, although rare, has been reported previously from a few localities in the Canadian Eastern Arctic. In spite of these earlier reports, and of the mention of the species from "Arkt. N.-Am." in the second edition of Engler and Prantl, Harmsen and Seidenfaden (1932, p. 35) make the statement "The species is very rare within the Arctic; the locality in Exeter Sound is new to Arctic America."

4. C. BAFFIN: Clyde, Polunin 1934 (B*) 630* 636. Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 35). *Cumberland Sound*, Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 533* 587* 2613a.
6. MELVILLE PENINSULA: South shore of Fury and Hecla Strait (Parry and Edwards ex Hooker 1825a, p. 418).
7. N. LABRADOR: Burwell, Polunin 1934 (B*) 893*, 906*.
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B*) 235*.

301. **Polytrichum hyperboreum** R. Br., Suppl. App. Parry's 1st Voyage, p. c[c]xciv (1824).

General Distribution. Circumboreal. Arctic Europe and Asia; Spitsbergen (where it reaches its northernmost known limit), Greenland; in North America ranging from Ellesmere and Melville Island (type locality) southward, but not reaching the United States.

E. Arctic Occurrence. Reported previously from only one or two localities within the Canadian Eastern Arctic, but very abundantly represented in the collections of Polunin, Dutilly, and Potter, so that its distribution in the region is now much better known.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 124). 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 124).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 (B*) 748*.
3. N. Baffin: Pond Inlet, Polunin 1934 (B*) 720*.
4. C. Baffin: Clyde, Polunin 1934 (B*) 627*. *Cumberland Sound,* Pangnirtung, Polunin 1934 (B*) 550* 557* 581* 587*.
5. S. Baffin: Point Brewster, Potter 1937 (Z,A) 17. Cape Dorset, Polunin 1934 (B*) 287*.
7. N. Labrador: Burwell, Dutilly 1936 (F,U,A) 1630 *c.fr.*, Polunin 1936 (F,A,X) 1082 *c.fr.*, 1114a *c.fr.*
8. N. Quebec: Wolstenholme, Polunin 1934 and 1936 (F,A,X,B*) 226* 227* 1259a (*c.fr.* axes up to 12 cm. long), 1297b, 2252b *c.fr.*, Dutilly 1936 (F,U,A) 915 *c.fr.*, 928 *c.fr.;* Mosquito Bay (Low ex Macoun 1902, p. 265, sub nom. *P. boreale*).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 13).

302. **Polytrichum piliferum** Hedw., Sp. Musc. Frond., p. 90 (1801).

General Distribution. Throughout Europe and Asia; Africa, Australasia, South America, Greenland; in northern North America extending from Ellesmere to Alaska and south to Labrador and the United States.

E. Arctic Occurrence. Previously reported from several localities in the Canadian Eastern Arctic; also well represented in the collections of Polunin, but never pure or in abundance.

1. Ellesmere: Harbour Fiord (Simmons ex Bryhn 1906, p. 124).
2. Devon, etc., Islands: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 33); Dundas Harbour, Polunin 1934 (B*) 795*.
3. N. Baffin: Pond Inlet, Polunin 1934 (B*) 691*.
4. C. Baffin: Clyde, Polunin 1936 (F,A,X) 2591a 2604a. Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 35). *Cumberland Sound* (Taylor ex Dickie 1869, p. 464); Pangnirtung, Polunin 1934 and 1936 (F,A,X,B*) 533* 2613a.
5. S. Baffin: *Resolution Island,* Acadia Harbour, Potter 1937 (Z,A) 14. *South Coast,* Cape Dorset, Polunin 1934 (B*) 274* 313*.
7. N. Labrador: Bowdoin Harbour, Potter 1937 (Z,A) 11 12.

303. **Polytrichum juniperinum** Hedw., Sp. Musc. Frond., p. 89 (1801).

General Distribution. Cosmopolitan. In all parts of the world (with the exception of the tropics, at least in the lowlands); throughout northern North America including the northern half of the United States, and extending farther south in the mountains.

E. Arctic Occurrence. Known in the Canadian Eastern Arctic from a number of earlier reports,[1] and also from a very full series of specimens collected by Polunin, Dutilly, and others.

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[1] Including such vague ones as "Coasts of Baffin's Bay" (Ross ex Brown 1819, p. cxliii; "Both sides of Baffin's Bay" according to Macoun and Kindberg 1892, p. 155). (N.P.)

1. Ellesmere: Grant Land at 82° 27′ N. (N, cf. Wolf ex Williams 1918, p. 211). *Hayes Sound region,* Cape Viele, Eskimopolis, Lastraea Valley, and Cape Rutherford (Simmons ex Bryhn 1906, p. 123). *South Coast,* Craig Harbour, Soper 1923 (O,A) 252; Goose Fiord (Simmons ex Bryhn 1906, p. 123).
2. Devon, etc., Islands: Dundas Harbour, Dutilly 1936 (F,U,A) 1342b, Polunin 1936 (F,A,X) 2498a *c.fr.*
3. N. Baffin: *Pond Inlet,* Bazin 1934 (M), Polunin 1936 (F,A,X) 2470a; Albert Harbour (Freuchen ex Hesselbo 1937, p. 17).
4. C. Baffin: Clyde, Dutilly 1936 (F,U,A) 1466b, Polunin 1936 (F,A,X) 2604a. *Cumberland Sound,* Pangnirtung, Polunin 1936 (F,A,X) 2611a 2613a; Blacklead Island, Soper 1924 (O,A) 287.
5. S. Baffin: *South Coast,* Cape Dorset, Soper 1926 (O,A) 668. *West Coast,* Camp Kungovik, Soper 1929 (O,A) 16.
6. Melville Peninsula: Vansittart Island (Freuchen ex Hesselbo 1937, p. 17).
8. N. Quebec: Wakeham Bay, Polunin 1936 (F,A,X) 1476a, 1480a *c.fr.* Wolstenholme, Polunin 1936 (F,A,X) 2252.

(? Islands in Hudson, etc., Bays: "Mansfield" (Mansel), Digges, or Nottingham Island (Bell 1884, p. 46).)

10. W. Coast Hudson Bay: Chesterfield (Freuchen ex Hesselbo 1937, p. 17), Dutilly 1936 (F,U,A) 594b, Polunin 1936 (F,A,X) 2233a 2246a.

304. **Polytrichum strictum** Turn., Musc. Hibern., p. 83 (1804).

General Distribution. Circumboreal. Through the mountains of Europe and Asia; Spitsbergen, Greenland, Antarctica; northern North America from Ellesmere to Alaska and southward to the northern United States.

E. Arctic Occurrence. Reported previously from only a few localities in the Canadian Eastern Arctic, as the result of the collections made by the Second *Fram* and Fifth Thule Expeditions; now collected in many other places by Dr. Polunin and his associates.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord, Cape Viele, Eskimopolis, and Lastraea Valley (Simmons ex Bryhn 1906, p. 124). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 124).
2. Devon, etc., Islands: Dundas Harbour, Polunin 1934 (B*). Cornwallis Island, Ede 1851 (T*).
3. N. Baffin: *Pond Inlet,* Bazin 1934 (M*), Polunin 1934 (B*) 669; Mitimatalik (Mathiassen ex Hesselbo 1937, p. 17).
4. C. Baffin: *Cumberland Sound,* Pangnirtung, Soper 1924 (O,A) 197 198 199, Polunin 1934 and 1936 (F,A,X,B*) 541* 2611a 2613a.
5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,A,X,B*) 442* 1233a.
6. Melville Peninsula: Danish Island (Freuchen ex Hesselbo 1937, p. 17).
7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 85).
8. N. Quebec: Diana Bay, Ney and Courtright 1936 (F,A,X) 2407a. Wolstenholme, Polunin 1934 (B*) 193* 194* 236*.
10. West Coast Hudson Bay: Chesterfield, Polunin 1936 (F,A,X) 2232.

CONCLUSION

From the make-up of the preceding list of species, as well as from the information that has now been accumulated about the distribution of each one, it becomes possible to draw some very general phytogeographical inferences.

In the first place, there is definitely a high-arctic element in the bryophyte flora. Thus the following are examples of species that are important components of the vegetation as far north as there is land and land-plants can grow, to beyond latitude 82 degrees or 83 degrees north, yet which do not flourish south of latitude 60 degrees north at sea-level: *Distichium hagenii* Ryan, *Arctoa hyperborea* (Smith) B.S.G., *Stegonia*

latifolia (Schwaegr.) Vent., *Voitia hyperborea* Grev. & Arn., *Haplodon wormskjoldii* (Hornem.) R. Br., *Mielichhoferia macrocarpa* (Drumm.) Br. & Sch., *Pohlia crudoides* (Sull. & Lesq.) Broth., *Bryum obtusifolium* Lindb., *Bryum globosum* Lindb., *Cinclidium subrotundum* Lindb., *Cinclidium arcticum* (B.S.G.) C. Müll., *Aulacomnium acuminatum* (Lindb. & Arn.) Paris, *Aulacomnium turgidum* (Wahlenb.) Schwaegr., *Conostomum boreale* Sw., *Drepanocladus berggrenii* (C. Jens.) Broth., and *Hygrohypnum polare* (Lindb.) Broth. In addition to these there are many other species that, although they grow as far north as those just cited, also exist in the mountains far south of the Arctic Zone. These species, the "arctic-alpine" species, have received much attention, even in North America, and a list of them would be too long to be published here. The most recent survey of alpine mosses is also one of the best (Greter 1936). Although this work is not especially concerned with North America, most arctic-alpine species are circumboreal, so that the net results are much the same.

One of the important facts that appears when the preceding catalogue is analysed, is that many of the species that have always been considered typically "western" species by American bryologists are also arctic species. Some of them are widespread in the Canadian Eastern Arctic, reaching Southampton, Baffin, or even Devon and Ellesmere Islands. This distribution may perhaps explain the source of many western plants that exist in isolated outposts in eastern North America. For instance, several species of bryophytes have been collected on the Keweenaw Peninsula of northern Michigan that are otherwise known in the United States only in the Rocky Mountains (cf. Steere 1937a). Much farther north, however, some of these Rocky Mountain-Keweenaw Peninsula species, which in the United States have a strongly marked disjunct distribution, reach eastern North America with a fairly widespread, non-disjunct distribution. Some examples of these species are *Timmia austriaca* Hedw., *Dicranoweisia crispula* (Hedw.) Lindb., *Cnestrum schisti* (Wahlenb.) Hagen, and *Oncophorus virens* (Hedw.) Brid. However, the presence in the Keweenaw Peninsula of several other species (for instance *Frullania bolanderi* Aust. and *Pseudoleskea oligoclada* Kindb.), which otherwise are known to grow only at sea-level in the temperate Pacific northwest, is not easily explained.

One curious result is that a whole group of species that are commonly considered by many authors to be "Arctic" are not truly arctic at all, at least in the Canadian Eastern Arctic. *Paludella squarrosa* (Hedw.) Brid., *Meesea triquetra* (Hook. & Tayl.) Ångstr., *Meesea uliginosa* Hedw., and *Calliergon richardsonii* (Mitt.) Kindb. are examples of species that are distinctly uncommon as far south as the United States, except in the mountains, and may be uncommon in the American Arctic Archipelago, yet are relatively abundant on the subarctic mainland, as shown by numerous specimens. There is apparently an actual subarctic element in the moss flora, which will eventually be defined only as the result of careful study and collection in the future. Any final and definite conclusions will have to wait until much more critical collecting has been done, along the lines suggested below.

The collections of bryophytes that have been brought back from the American Arctic in the past have been almost uniformly disappointing to bryologists, in spite of the industry and good intentions of the collectors.

Sir Joseph Hooker (1875, p. 63), who had seen the bryophytes resulting from the arctic expeditions of the half-century preceding him, furnished directions to the new English Arctic Expedition for the collection of mosses and Hepaticae. His statement, which follows, is still accurate and applies as well now as then: "These have never been collected with the care they deserve in the Arctic regions. They are much more numerous than a casual observer, or one who attends to flowering plants only, would suppose, and can only be satisfactorily collected by close attention. Not unfrequently several species grow together in one tuft, and the Hepaticae especially are often found threading the tufts of mosses as solitary individuals."

In spite of Hooker's admonition, very little improvement resulted, because more than 60 years later we find the same problem well stated by one of the best qualified and most experienced workers on the arctic bryophyte flora. Hesselbo (1937, p. 3) says of the Bryophyta of the Fifth Thule Expedition, a major expedition of his own Danish countrymen: "The mosses collected by various members of the Fifth Thule Expedition consist in part of samples of vegetation from a number of localities scattered over the entire region covered by the Expedition, and in part of moss stems picked out of the phanerogamic material. None of the collectors, however, had any special knowledge of the mosses, and consequently the material now examined is rather casual in character and can give no more than a very imperfect picture of the composition of the moss flora in that region. As is almost always the case in the Arctic, the moss samples oftenest consist of a large number of species, most of them sterile. Of many of the mosses only solitary stems were found in the samples."

It has gradually been impressed upon me that more through habit than for any other reason, arctic botanists have for the past century put an undue stress upon the collection and study of vascular plants. The really remarkable feature, however, is that (as bryologists have complained for so long), although bryophytes have always been collected casually and incidentally to the phanerogams, there are actually more species of Bryophyta than phanerogams known from the Canadian Eastern Arctic.

Of all the arctic expeditions until very recent times, only the Second *Fram* Expedition made systematic and large collections of mosses. Even though Simmons was not a bryologist, as is indicated by the fact that he used no bryological data in his "Survey of the Phytogeography of the Arctic American Archipelago" (1913), he managed to collect more than twice as many species of bryophytes as he did phanerogams and pteridophytes put together. Where the 4 years of intensive botanical work yielded about 10 species of flowering plants new to the flora of the American Arctic, less critical work on the collection of bryophytes yielded more than 100 such new records.

The mosses of the Canadian Arctic Expedition of 1913-18 were collected only casually by non-bryologists, yet Williams (1921) has listed 68 species. The Hepaticae, which are still unreported, would certainly add another 20 species. A total of 230 species of vascular plants is enumerated from the Canadian Western Arctic as the result of more careful collection by the same collectors. A competent field bryologist could certainly raise the number of species of bryophytes from less than a hundred to a number equal to or greater than this total of vascular plants.

Thus, I should suggest that perhaps the emphasis has been somewhat misplaced, and that the groups of plants most characteristic of the Arctic Zone, the mosses and lichens, have paradoxically been the most neglected. No bryologist has ever had opportunity to collect bryophytes in the American Arctic Archipelago. Williams is the only bryologist who has ever collected north of latitude 60 degrees north in America. His large collection from the Yukon was made in a restricted area and only in spare time during 1898-9, yet more than 250 species have been identified from his collections (cf. Howe 1901; Williams 1901).

The botanical problems open to a bryologist in the Canadian Eastern Arctic are practically unlimited. In the first place, of course, a large number of species previously unreported from the region could probably be added to the list.

The most stimulating problems are not purely and primarily taxonomic, however, although they are bound up with an exact understanding of the identity of the species concerned. These problems, although extremely varied, fall under three major headings: (1) Bryogeography, (2) Ecology, and (3) Bryocoenology.

(1) *Bryogeography.* As already mentioned, an experienced field bryologist could doubtless add many species to the known flora of the American Arctic. The non-bryologist is apt, quite naturally, to confuse species closely resembling each other macroscopically, and to fail to observe the very small, often sterile, species on rocks and clay soil, many of which are of phytogeographical importance. In addition to the broad problems of very general distribution, such as simply establishing the presence or absence[1] of a species in the whole area, there is a group of subsidiary problems.

It has been mentioned above that there is a truly arctic element among the mosses. It will be interesting to see whether or not this element is subdivided into smaller groups, each one characteristic of a smaller area within the Arctic Zone.

The abundance of any moss within a region can be judged only by a bryologist in the field. An inexperienced collector would be liable to base his notes about a particular species, especially if concluding it to be widespread and abundant, on a mere confusion of several species. A bryologist, in identifying a collection that he did not make, is often able to tell whether or not a species is common or widely distributed; but he can only infer its abundance relative to other plants, although the importance of having complete information on the relative abundance of each species in different areas is obvious. In the first place this information may be used to interpret centres and routes of migration of species and groups of species. Data concerning the abundance at different altitudes and under other ecological conditions are needed. The number of specimens of a particular species in any collection is usually no index to its actual incidence of occurrence, because the ubiquitous species will soon be recognized and few collections made. The less common species will probably be collected each time they are seen. Most collections show this paradoxical condition of having much material of relatively uncommon species, and much less of the very abundant ones.

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[1] To 'establish the absence' of a species, especially a very small cryptogam, "in the whole area", would seem to me almost impossible. Indeed one wonders how many apparently 'disrupted ranges' and other bases for phytogeographical theorizing are in reality due to the incompleteness of exploration of intervening areas—cf. my remarks on the "Geographical Distribution of *Arenaria humifusa* Wahlenb., new to the Flora of Spitsbergen" (*Nature*, CLII, pp. 451-2, 1943), to which there are now several further stations to add. (N.P., October 1946.)

Perhaps the most interesting of the phytogeographical problems concern themselves with the local distribution of rare or relic species, many of which show disjunction to a greater or lesser degree. Although a few studies on the local distribution of bryophytes have been made in Europe, this sort of investigation has been started in North America only very recently (Steere 1937a, 1937b).

(2) *Ecology.* The effect of the rigorous arctic climate on the different species of bryophytes has never been approached as an ecological problem, but only in a taxonomic manner. Why is it that some species are extremely reduced and apparently barely surviving, whereas others are extremely robust and flourishing? The various factors of the habitat, such as light, temperature, water, and edaphic conditions, although difficult to separate, need a greater amount of study in the Arctic. Useful surveys of the literature, methods, and problems of bryological ecology in more temperate regions have been published by Richards (1929 and 1932). Some of the effects of the environment of mosses are very important taxonomically. A series of careful observations or even carefully annotated specimens would be very helpful in determining whether or not many of the arctic "varieties" or even "species" are not in reality only simple habitat forms.

Practically no study has been made of life-forms and growth-forms in Bryophyta; yet such a study would yield exceedingly important results, especially if arctic material were used.

Even such a simple subject as phenology has been left completely untouched in the American Arctic. It would be interesting to know just how much time may elapse between the inception of the sporophyte generation and its maturation. From some of the material that I have seen, I begin to suspect that in the very short arctic growing-season, some mosses, especially those of deep ravines and snowbanks, may require more than one year to mature fruit.[1]

The succession of species of bryophytes in different habitats in the Arctic is completely unknown, yet should respond very easily to investigation, because of the tendency towards simplification of habitats in the Arctic.

(3) *Bryocoenology.* The study of the natural moss communities of the American Arctic has been neglected perhaps more than any other phase, primarily because only a bryologist would be able to make the necessary critical field notes and collections necessary to validate them (cf. Gams 1932). No work has been done in the Canadian Eastern Arctic that compares with the work begun in Greenland (cf. Harmsen 1933). The classic work of this sort that has been done in the Subarctic is Hesselbo's "The Bryophyta of Iceland" (1918), a work that sets a high standard for future investigation.

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[1] I have similar suspicions about *Koenigia islandica* and perhaps such other (normally) annual phanerogams as reach our area—cf. Part I, p. 175, of the present series. (N.P.)

It is impossible to learn much about the association of species and communities from the usually very small samples that are furnished for identification. In the first place, the arctic Bryophyta commonly grow in great mixture; in a transition zone between habitats as many as fifteen species may occur in a single handful of "moss." The rarer ones are represented only as occasional single stems intertwined with other species. Thus most of the species brought back from Arctic America, especially the rarer ones, have been collected only by accident. This fact is the best recommendation for large specimens. The larger the specimen collected, the more likely it is to contain many and interesting species.

Several authors have tried to draw fairly definite conclusions on the communities of mosses from the specimens collected by other botanists. Bryhn is perhaps most justified in the citation of associated species, because of the enormous size of Simmons's collections. In the preceding catalogue I have omitted, for the reasons given, notes on the abundance, local distribution, and association of the species, because only authentic notes on these topics made by critical collectors who are familiar with bryophytes in the field can be used for this purpose.

To summarize: the whole field of the Bryology of the American Arctic, with the exception of the purely taxonomic phase, is virtually unknown.

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7. HEPATICAE

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INTRODUCTION AND HISTORICAL ACCOUNT

The liverworts have been even more neglected than most other groups of cryptogams in the Canadian Eastern Arctic, such trained botanists as have worked there having been primarily "vascular" men, who, if they considered non-vascular plants at all, concerned themselves chiefly with the more spectacular or ecologically important mosses and lichens or, in a few instances, Fungi or Algae. Nevertheless, the history of the study of liverworts in this vast area is a fairly long one, as the following summary will show, though often the records result from the chance discovery by an examining specialist of mere scraps intertwined in tussocks of moss or lichen.

What appears to be the first authoritative report of an Hepatic from within or near our area is comprised in the mention by Robert Brown (1819, p. cxliv) in his "Botanical Appendix" to John Ross's "Voyage of Discovery . . . for the purpose of exploring Baffin's Bay" of simply a *"Jungermannia—, fructificatione nulla"*. It is not even possible to find out whether it came from the west (Baffin Island) or the east (Greenland) side of Baffin Bay.

The next pertinent publication is of much greater detail and importance, giving us our first proper records of Hepaticae from the Canadian Eastern Arctic. This is in W. J. Hooker's list of plants (1825a) in the "Appendix to Captain Parry's Journal of a Second Voyage for the discovery of a North-West Passage . . . in the years 1821-22-23", on pages 420-1 of which are mentioned eight Hepaticae from our area, although unfortunately precise localities are lacking in six cases.

In his Botanical Appendix, published in 1826, to Parry's "Journal of a Third Voyage . . ." the elder Hooker does not mention any Hepaticae among the plants "which had not been found during the previous voyages", but meanwhile he had confirmed the occurrence in our area of the familiar *Marchantia polymorpha* L. with his report of it (1825b, p. 198) in Lyon's "Brief Narrative of an unsuccessful attempt to reach Repulse Bay . . . in the year MDCCCXXIV".

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Following this not very impressive start to the study of Hepaticae in our area there was a lapse of some 30 years during which, so far as I can find from the literature, no advance of any kind was made. (Even if the Franklin expedition collected Hepaticae before perishing, none of their plant collections were ever recovered.) Then in 1857 J. D. Hooker published (p. 120) a list of nine Hepaticae determined by William Mitten; they had been collected by Dr. D. Lyall during Franklin Search expeditions, and seven of them came from our area.

It was the younger Hooker again who published (1861, p. 86) *"Jungermannia Starkii,* Funk." from Devon Island, collected by Dr. Walker during M'Clintock's memorable voyage in the *Fox* in 1857-9.

About this last-mentioned period James Taylor, surgeon on whaling vessels, began making his important collections "on both sides of Davis Straits and Baffin's Bay" (cf. Taylor 1863). The Bryophyta were treated by Dickie, who lists (1869, p. 465) fourteen Hepaticae; ten of these were stated (or implied) to occur in our area. Dickie also reported (1871, p. 34) five Hepaticae as having been collected farther north by Dr. E. P. Philpotts (*sic ex* Dickie 1871) in 1866 on what is now known as Philpots Island (*See* map in pocket).

Henry Chichester Hart, naturalist to Sir G. S. Nares's *"Alert* and *Discovery"* Expedition, does not appear to have been much of a cryptogamist—at least Mitten, who dealt with the "Mosses and Jungermanniaceae", found (1878, p. 319) only one of the latter in his collections. This was, however, from Hayes Sound—apparently the first report of an Hepatic from far northern Ellesmere.

Nares's expedition completed the primary exploration of the northernmost coasts of the Canadian Eastern Arctic and opened a new era of scientific investigation in the Far North. It was followed by Greely's International Polar Year Expedition from the United States, also to northern Ellesmere, in which most of the personnel perished and the main collections had to be abandoned. However, Lehnert and Greely (1886, p. 397) record one Hepatic from Grinnell Land.

In 1884 Dr. Robert Bell of the Geological Survey, Canada, spent the summer making scientific observations in the Hudson Bay and Hudson Strait region. His botanical results were published the same year by Professor John Macoun, who names (1884, p. 46DD) four Hepaticae from our area. Even if "Mansfield, Digge's and Nottingham Islands, at the western end of the straits"; are here "lumped" as if they constituted a single locality, all but one of the records can be sorted out and three species given their proper stations by reference to subsequent publications.

The year 1890 saw the appearance of W. H. Pearson's "List of Canadian Hepaticae". It includes, without explanation, both Alaska and Greenland; but it practically misses the point so far as our area is concerned. Indeed, in spite of all that has been mentioned above as accomplished and published before this date, Pearson cited only two records from our area. Almost as disappointing is Macoun's "Hepaticae" in his "Catalogue of Canadian Plants." Part VII, "Lichenes and Hepaticae", was not published until 1902, but still only four Hepatics are cited as having been found in our nearly half a million square miles of land. Three of these were species that

Macoun had already reported in Bell's collections in 1884. The fourth was collected by Bell during a subsequent expedition into our area in 1885. Another report that Macoun had himself made in 1884 he failed to repeat in his publication of 1902.

The fine "Second Norwegian Arctic Expedition in the '*Fram*'" spent most of the period 1898-1902 investigating the northern parts of our area. Their excellent botanist, Dr. Herman G. Simmons, made almost single-handed the largest collection of Bryophyta that has ever been brought back from our area. They were worked up by Bryhn (1906-7), who reports in the "Systematisk Fortegnelse" on pages 25-52 of his important work no less than fifty-seven species of Hepaticae, all but one of which were found within our area. This is about as many as the total number of different species known to have been found anywhere in our area by all other (previous or subsequent) collectors. Of Bryhn's paper Rydberg (1908) gives a shortened version in English, with lists of the new forms described and of the additions to the known flora of America. As compared with Part I of the present series, in the introduction to which a detailed list was given, the following additional localities occur in Bryhn's report and recur in the list of species given below: South Cape Fiord (Sydkapfjord), 76° 25-37′ N., 85° W., Excrementbugten ('Ekscrementbugten' on map), 76° 35′ N., 89° 30′ W., Cape Vendome ('Vendomkap'), c. 76° 24′ N. and c. 89° 20′ W., and 'Isachsens Fiord', which I have been unable to locate precisely but which is evidently somewhere in King Oscars Land (western Ellesmere).

In 1905 Sir William MacGregor, then Governor of Newfoundland, collected *Chandonanthus setiformis* (sub nom. *Blepharostoma setiformis*) and *Ptilidium ciliare* "Between lat. 60° and 60° 30′ N." on Chidley Peninsula, as was promptly reported in the Kew Bulletin of Miscellaneous Information (Anon. 1907, p. 86).

Although it is often complained that Peary's polar perambulations brought few scientific results, Bryhn (1908, p. 14) has identified four species of Hepaticae that Peary collected at Fort Conger, and two more that Dr. L. J. Wolf picked up at Wrangel Bay when engaged on a relief expedition in 1906. Both these stations are in northern Ellesmere. Bryhn's names were upheld by Mrs. Elizabeth G. Britton (1909, p. 106).

The Danish "Fifth Thule Expedition" of 1921-4, although lacking any trained biologist, brought back a considerable amount of botanical material. The Bryophyta have been worked up by Hesselbo, who reports (1937) fifteen Hepaticae (plus one not numbered). Of these only *Marchantia polymorpha* (and perhaps *Cephalozia media,* for which no locality is given)[1] was not found in our area, leaving a total of at least fourteen that were.

In 1928 another Danish expedition visited two widely separated parts of our area. Plants were collected by Gunnar Seidenfaden; but of a total of over twenty species of Hepaticae listed by Harmsen and the collector (1932), only nine were found growing in our area.

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[1] It is merely noted as "Very sparse in tussocks of *Dicranum elongatum*". The latter, however, is recorded in the same report from numerous localities both within and outside our area.

In 1930 Dr. G. M. Sutton of the Carnegie Museum, Pittsburgh, collected plants in South Bay, Southampton Island. Jennings (1936, p. 13) lists seven Hepaticae that were "found intermixed in tufts of mosses".

During the Oxford University Expedition of 1931 I collected just four Hepaticae among the nearly three hundred land plants obtained on the limestone barrens and occasional more favourable habitats of Akpatok Island in Ungava Bay (cf. Polunin 1934a, pp. 202-4). Hepatics play a very minor part as components of the vegetation on this island (Polunin 1934b). Nor are they much more important in other parts of our area, except sometimes very locally (*See* Part III of the present series). My 1931 collection also included three Hepatics from Port Burwell, and *Ptilidium ciliare* (L.) Hampe found during the brief period spent ashore at Nullataktok Bay, which lies on the Atlantic coast of Labrador, a few hours sailing to the south of our area. The specimens were determined by Mr. W. R. Sherrin, A.L.S., of the British Museum.

In 1934 I accompanied the Canadian Eastern Arctic Expedition to a number of distant points in our area. During the short time (generally only about 24 hours) ashore at each station, no special attention could be given to the Hepaticae except in the few cases in which they were of ecological importance. Nevertheless my "bag" of eighteen species, again kindly determined by Mr. Sherrin, was a considerable improvement on that of 1931.

In 1936 I once more visited the area with the Canadian Eastern Arctic Expedition of that year, landing at all the stations investigated in 1934 and a few others besides. Again, unfortunately, I was unable to concentrate on Hepaticae and collected only fourteen species, of which one was found to the south of our area. The specimens were identified by Dr. Alex. W. Evans, Emeritus Professor of Botany at Yale University, to whom I offer my most cordial thanks.[1]

There follows a list of all the records of liverworts from the Canadian Eastern Arctic that I have been able to glean from field and library.[2] I cannot, unfortunately, add "herbaria"—as this is my first venture into the realms of Hepaticology, and so I have not dared to rely on any determinations of my own. Nor have I attempted to make any statements as to the variability or general distribution of each species, because I am not yet qualified to judge the degrees of reliability that may be placed on the determinations of the numerous authors and herbarium workers concerned.

In view of the great similiarity in the Hepatic flora on the two sides of the North Atlantic, it has been found most practicable in questions of nomenclature to follow Müller (1906-16), even if recourse has sometimes been had to the larger (but frequently inaccurate) work of Stephani (1898-1925). Other modifications have been introduced in deference to MacVicar's excellent "Handbook" (2nd ed. 1926), although not without giving the Müllerian synonym to facilitate reference to the stock work.

Because of recent proposals—e.g., by Buch, Evans, and Verdoorn (1937) —or other causes that question or detract from the value or completeness of the larger publications on the subject, and the general lack of agreement as to specific and generic limits in the group, I have thought it best in the list to arrange both genera and species alphabetically. In considering the separability and synonymy of each of the latter in the British Museum, I have been fortunate enough to be able to consult Mr. W. R. Sherrin, for whose tireless help I am once again deeply grateful. The paper has also been perused by Mr. W. E. Nicholson,[1] from whose expert advice I have benefited and to whom I offer cordial thanks.

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[1] **I am also indebted to Professor Evans for kindly reading the proofs of this contribution and for making several helpful suggestions—November 1946.**

[2] **Reports published since this paper was written are mentioned in the Foreword, pp. iii-iv—November 1946.**

LIST OF SPECIES

1. **Alicularia scalaris** (Schrad.) Corda, in Opiz, Beitr. zur Natur. I, p. 652 (1829).

It seems wisest to query our one old report of a species that is at home chiefly in temperate and low-alpine regions, even if Professor Evans (1900, p. 296, sub syn. *Nardia scalaris*) and others credit it with reaching southern Alaska.

E. Arctic Occurrence.

(? MELVILLE PENINSULA: ? *no loc.* (Edwards ex Hooker 1825a, p. 420, sub nom. *Jungermannia scalaris*).)

2. **Aneura pinguis** (L.) Dum., Comm. bot., p. 115 (1823).

Riccardia pinguis (L.) S. F. Gray

Sarcomitrium pingue (L.) Mitten

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Lastraea Valley (Simmons ex Bryhn 1906, p. 26). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 26).
2. DEVON, ETC., ISLANDS: *Devon Island,* Dundas Harbour, Polunin 1936 (F) 2509a-21; Beechey Island (Lyall ex Hooker 1857, p. 120).

(MELVILLE PENINSULA: ? *no loc.* (Edwards ex Hooker 1825a, p. 421, sub nom. *Jungermannia pinguis*).)

(ISLANDS IN HUDSON, ETC., BAYS: ? *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 14, sub nom. *Riccardia* sp. "a few bits . . . mixed with *Cephaloziella Hampeana* var. *subtilis* . . .").)

I have also found this species on the east coast of Hudson Bay a little to the south of our area—Port Harrison, Quebec, 1936 (F) No. 1569a-40, *fide* A. W. Evans.

3. **Anthelia julacea** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 18 (1835).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Lastraea Valley and Cape Rutherford (Simmons ex Bryhn 1906, p. 47). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 47); 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 47).
4. C. BAFFIN: Pangnirtung, Polunin 1934 (B) 580, 581 (in part), 582.

4. **Anthelia juratzkana** (Limpr.) Trevis., Mem. 1st. Lomb. III, p. 416 (1877).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 47). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 47).

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[1] Now deceased. Since the preparation of this paper in 1938 there have been four published additions (*See* Foreword to the present volume) to the 78 species of Hepaticae then known to occur in our area, and further collections, including one made during an extensive air-borne expedition from which I have just returned, remain to be worked up—October 1946.

5. **Aplozia (Haplozia) atrovirens** (Schleich.) Dum., Hep. Eur., p. 63 (1874).

E. Arctic Occurrence.

1. ELLESMERE: South Cape and Goose Fiords (Simmons ex Bryhn 1906, p. 28).

var. **gracilis** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 28 (1906).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, and Beitstad Fiord (Simmons ex Bryhn 1906, p. 28). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 28). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 28).

6. **Aplozia (Haplozia) polaris**[1] (Lindb.) Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 29 (1906).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Beitstad Fiord, Twin Glacier Valley, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 29). *South Coast,* Harbour, South Cape, and Goose Fiords (Simmons ex Bryhn 1906, p. 29); 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 29).

7. **Aplozia (Haplozia) pumila** (With.) Dum., Hep. Eur., p. 59 (1874).

Jungermannia pumila With.

E. Arctic Occurrence.

1. ELLESMERE: Fram Harbour (Simmons ex Bryhn 1906, p. 28).
8. N. QUEBEC: Wolstenholme, Polunin 1936 (F) 2250c-1 (in part).

8. **Aplozia (Haplozia) sphaerocarpa** (Hook.) Dum., Hep. Eur., p. 61 (1874).

E. Arctic Occurrence.

3. N. BAFFIN: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 9).
6. MELVILLE PENINSULA: "Cape Elizabeth" (Elizabeth Point) (Bangsted ex Hesselbo 1937, p. 9). Vansittart Island (Freuchen ex Hesselbo 1937, p. 9).

var. **nana** (Nees) K. Müller, Rabenhorst's Krypt.-Fl., VI, 1, p. 548 (1909).

E. Arctic Occurrence.

1. ELLESMERE: Goose Fiord (Simmons ex Bryhn 1906, p. 29, sub syn. *A. sphaerocarpa* var. *lurida*).

9. **Arnellia fennica** (Gott.) Lindberg, Medd. Soc. F. Fl. Fennica, XIV, p. 70 (1887).

E. Arctic Occurrence.

1. ELLESMERE: *Lady Franklin Bay,* Fort Conger (Peary ex Bryhn 1908, p. 14). *Hayes Sound region,* near Fort Juliane, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 28). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 28). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 28); Excrementbugten (Simmons ex Bryhn 1906, p. 28).
2. DEVON, ETC., ISLANDS: *Devon Island,* 'Havhestberget' (Simmons ex Bryhn 1906, p. 28).

10. **Blepharostoma trichophyllum** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 18 (1835).

This is one of the most plentiful liverworts in the Far North. It is said by Bryhn (1906, p. 46) to be well represented in almost all of Simmons's collections from different parts of Ellesmere.

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[1] Professor A. W. Evans points out (*in litt.*) that "Both Stephani and Müller consider this a synonym of *A. atrovirens*" —November 1946.

E. Arctic Occurrence.

1. Ellesmere: numerous collections from many stations (Simmons ex Bryhn 1906, p. 46), also *Lady Franklin Bay,* Fort Conger (Peary ex Bryhn 1908, p. 14). *Hayes Sound* (Hart ex Mitten 1878, p. 319, sub nom. *Blepharozia trichophylla—See also* Lehnert and Greely 1886, p. 396). *South Coast,* Craig Harbour (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 19).
3. N. Baffin: Pond Inlet ("Pond's Bay") (Lyall ex Hooker 1857, p. 120, sub syn. *Jungermannia trichophylla),* (Mathiassen ex Hesselbo 1937, p. 10), Polunin 1934 (B) 696 (in part); Navy Board Inlet (Lyall ex Hooker 1857, p. 120, sub syn. *Jungermannia trichophylla).* Arctic Bay, Polunin 1936 (F) 2563a-11 (in part).
6. Melville Peninsula: Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 10); Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 10). *Vansittart Island,* Danish Island (Freuchen ex Hesselbo 1937, p. 10).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 15).

var. **brevirete** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 46 (1906).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Skräling Island, Eskimopolis, and Cape Rutherford (Simmons ex Bryhn 1906, p. 46). *South Coast,* Fram Harbour (Simmons ex Bryhn 1906, p. 46). *West Coast,* Excrementbugten (Simmons ex Bryhn 1906, p. 46).

11. **Cephalozia ambigua** Massalongo, Malpigia, XXI, p. 22 (1907).

C. biscuspidata (L.) Dum. var. *arctica* Bryhn & Kaalaas

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord, Cape Viele, Twin Glacier Valley, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 44).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 14).

12. **Cephalozia bicuspidata** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 18 (1835).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Skräling Island, Cape Viele, and Twin Glacier Valley (Simmons ex Bryhn 1906, p. 44).
3. N. Baffin: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 10).
4. C. Baffin: Clyde, Polunin 1936 (F) 2604a-38 (in part).

Quite recently I also found this species a little to the south of our area on the east coast of Hudson Bay—Port Harrison, Quebec, 1936 (F) No. 1569a-40 (trace only), *fide* A. W. Evans.

13. **Cephalozia fluitans** (Nees) Spruce, On Cephalozia, p. 50 (1882).

E. Arctic Occurrence.

4. C. Baffin: Pangnirtung, Polunin 1934 (B) 582 (in part).
8. N. Quebec: Wolstenholme, Polunin 1934 (B) 217.

14. **Cephalozia media** Lindberg, Medd. Soc. F. Fl. Fennica, VI, p. 242 (1881).

Besides the single proper record given below, this species is also reported by Hesselbo (1937, p. 10), but unfortunately without mention of the locality or collector (*See* also page 493).

E. Arctic Occurrence.

1. Ellesmere: Lastraea Valley (Simmons ex Bryhn 1906, p. 43).

15. **Cephalozia pleniceps** (Aust.) Lindberg, Medd. Soc. F. Fl. Fennica, IX, p. 158 (1883).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Skräling Island, Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, and Fram Harbour (Simmons ex Bryhn 1906, p. 43). *South Coast,* South Cape Fiord and Goose Fiord (Simmons ex Bryhn 1906, p. 43).
3. N. BAFFIN: *Pond Inlet* (Mathiassen ex Hesselbo 1937, p. 10).

16. [1]**Cephaloziella biloba** (Lindb.) K. Müller, Rabenhorst's Krypt.-Fl., VI, 2, p. 174 (1913).

E. Arctic Occurrence.

1. ELLESMERE: Harbour Fiord (Simmons ex Bryhn 1906, p. 44, sub syn. *Cephalozia biloba*).

17. **Cephaloziella bryhnii** (Kaalaas) Schiffn., Oesterr. Bot. Zeitschr., LV, p. 290 (1905).

E. Arctic Occurrence.

1. ELLESMERE: Cape Rutherford (Simmons ex Bryhn 1906, p. 44, sub. syn. *Cephalozia bryhnii*).

18. **Cephaloziella grimsulana** (Jack) K. Müller, Rabenhorst's Krypt.-Fl., VI, 2, p. 171 (1913).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Skräling Island, Cape Viele, Eskimopolis, Cape Rutherford, Cocked Hat Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 45). *South Coast, etc.,* Fram, South Cape, and Goose Fiords (Simmons ex Bryhn 1906, p. 45); 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 45).

19. **Cephaloziella hampeana** (Nees) Schiffn., in Loeske, Moosfl. des Harzes, p. 92 (1903).

This was reported somewhat tentatively in the Fifth Thule Expedition material by Hesselbo, who remarked (1937, p. 10) "In a large number of moss samples from almost all the localities examined there is a fine *Cephaloziella,* but it is almost always sterile . . . and . . . a definite determination is impossible". The following individual records are to be found in other parts of Hesselbo's paper, although it seems necessary to insert a query in each case:

(N. BAFFIN: ?Pond Inlet (Mathiassen ex Hesselbo 1937, p. 6). ?Gifford Fiord (Mathiassen ex Hesselbo 1937, p. 7).)

(MELVILLE PENINSULA: ?Igloolik (Freuchen ex Hesselbo 1937, p. 6). ?Itivdleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 5). ?Vansittart Island (Freuchen ex Hesselbo 1937, p. 4).)

(ISLANDS IN HUDSON, ETC., BAYS: ?Southampton Island (Mathiassen ex Hesselbo 1937, p. 7).)

This was the only Hepatic collected on King William Island by Dr. Knud Rasmussen during the same expedition (cf. Hesselbo 1937, p. 8).

var. **subtilis** (Velenovsky) MacVicar, Stud. Handb. Brit. Hep. 2nd edit., p. 284 (1926).

Cephaloziella rubella (Nees) Warnstorf var. *subtilis* (Velenovsky) K. Müller

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[1] Professor A. W. Evans points out (*in litt.*) that "The species of *Cephaloziella* are especially confusing, in spite of Frye and Clark's excellent treatment of the genus. In all probability culture experiments will be necessary before the species are well understood. Any treatment of the genus, therefore, must be more or less provisional."

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 14).

? *Cephaloziella rubella* (Nees) Warnstorf, Krypt. Fl. Mark Brandenburg, I, p. 231 (1902); "emend. Douin in litt. 1912".[1]

C. bifida (Schreb.) Schiffn.

E. Arctic Occurrence.

Doubtful—tentatively reported from

C. Baffin: Exeter Sound? (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 19, "too poor to allow of a certain determination").

20. **Cephaloziella starkii**[2] (Funck) Schiffn., Lotos No. 7, p. 341 (1900).

E. Arctic Occurrence.

2. Devon, etc., Islands: *Devon Island,* Cape Osborne[3] (Walker ex Hooker 1861, p. 86, sub syn. *Jungermannia starkii*).
4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 19).
6. Melville Peninsula: Barrow River (Edwards ex Hooker 1825a, p. 420, sub syn. *Jungermannia byssacea*).
8. N. Quebec: Wolstenholme, Polunin 1934 (B) 236 (in part).

21. **Cephaloziella verrucosa** s.l.[4] (Jens.) Bryhn & Kaalaas, in Bryhn, Christiania Vid.-Selsk. Forh. for 1908, 5, p. 4 (1908).

Cephalozia verrucosa (Jens.) Bryhn & Kaalaas

E. Arctic Occurrence.

1. Ellesmere: *Lady Franklin Bay,* Fort Conger (Peary ex Bryhn 1908, p. 14). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Skräling Island, Cape Viele, Eskimopolis, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Cocked Hat Island, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 45). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 45). *West Coast, etc.,* Lands End, Reindeer Cove, Excrementbugten, and 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 45).

22. **Chandonanthus setiformis** (Ehrh.) Lindberg,[5] Musci Scand., p. 5 (1879).

Jungermannia setiformis Ehrh.

Blepharostoma setiforme (Ehrh.) "Lindberg"

Temnoma setiforme (Ehrh.) Howe

E. Arctic Occurrence.

1. Ellesmere: Bedford Pim Island (Simmons ex Bryhn 1906, p. 46).
2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 34).
3. N. Baffin: Pond Inlet, Polunin 1934 (B) 691.

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[1] According to Müller (1913, p. 153).

[2] Named after "Pastor Starke in Gross-Tschirnau bei Guhrau in Schlesien. Gestorben 1808" (cf. Müller 1913, p. 176), but it may be contended that this is the properly latinized form—cf. the case of *Ranunculus sabinii* cited in Bull. Torrey Bot. Club, LXXI, p. 248, 1944. It should be noted that most recent writers consider *Cephaloziella starkii* a synonym of *C. byssacea* (Roth) Warnst. Krypt.-Fl. Mark Brandenburg, I, p. 224 (1902). (October 1946.)

[3] This locality, not listed in the introduction to Part I, lies on the east coast of Devon Island, northeast of Cape Warrender.

[4] I.e., *sensu* C. Jensen, whose original "*Cephalozia divaricata* var. *verrucosa*" consisted of *Cephalozia arctica* Bryhn & Douin "zum grössten Teil" (cf. Müller 1913, p. 159) and of *Cephaloziella starkii* var. *verrucosa* Schiffn. "zum kleinsten Teil" (cf. Müller 1913, p. 179). The exact composition of the material reported on by Bryhn accordingly needs reinvestigation. (November 1946—Professor A. W. Evans points out (*in litt.*) that "*Cephaloziella verrucosa* is now known as *C. arctica* Bryhn & Douin.")

[5] N.B. Not "Mitten in Hooker's Handb. N. Zealand Flora".

4. C. Baffin: "common" (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1934 (B) 589, 590, 591 (in part); Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 19). *Cumberland Gulf,* Pangnirtung, Polunin 1934 (B) 532, 550 (in part).

5. S. Baffin: Lake Harbour, Polunin 1934 and 1936 (F,B) 442 (in part), 2295a-51, 2295a-52; Dorset, Polunin 1934 (B) 274 (in part).

(Melville Peninsula: ? *no loc.* (Edwards ex Hooker 1825a, p. 420).)

7. N. Labrador: Chidley Peninsula (MacGregor ex Anon. 1907, p. 86).

8. N. Quebec: Wakeham Bay, Polunin 1936 (F) 1480b-25.

This species I also found recently a little to the south of our area in the north of Labrador—Hebron, 1936 (F) No. 1052b-1, *fide* A. W. Evans.

var. **alpinus** (Hook.) Kaalaas, Nyt Mag. for Naturv., XXXIII, p. 227 (1893).

E. Arctic Occurrence.

4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 20).

23. **Clevea hyalina** (Sommerf.) Lindberg, Nat. pro Fauna et Fl. Fennica, IV, p. 291 (1868).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 25). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 25).

24. **Diplophyllum gymnostomophilum**[1] (Kaalaas) Kaalaas, Christiania Vid.-Selsk. Skr., No. 9, p. 4 (1898).

Evidently very rare in our area, as Bryhn remarks (1906, p. 47).

E. Arctic Occurrence.

1. Ellesmere: *South Coast, etc.,* Harbour Fiord and 'Isachsens Fiord' (Simmons ex Bryhn 1906, p. 47).

25. **Diplophyllum incurvum** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 48 (1906).

Although I have retained this species in deference to its authors and to such others as Stephani (IV, 1910, p. 111), it should be recalled that Müller (1914, p. 372), who examined a scrap of Bryhn's material, thought it more like a *Sphenolobus,* concluding with the remark that "Jedenfalls ist aber eine nähere Verwandtschaft mit *D. gymnostomophilum* nicht vorhanden".

E. Arctic Occurrence.

1. Ellesmere: *Grant Land,* Wrangel Bay (Wolf ex Bryhn 1908, p. 14); Fort Conger (Peary ex Bryhn 1908, p. 14). *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Lastraea Valley, Twin Glacier Valley *"forma monstrosa",* Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 49). *South Coast,* Fram, Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 49). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 49).

2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 49).

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[1] Professor A. W. Evans points out (*in litt.*) that this species is "now referred to the genus *Scapania,* as *S. gymnostomophila* Kaalaas"—November 1946.

26. **Fimbriaria** sp.[1]

E. Arctic Occurrence.

9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B) . . . growing in one instance towards the inside of a late-melting patch of snow (cf. Polunin 1934b, p. 389) and in another case on a damp, sparsely vegetated (solifluction?) slope of limestone origin (*ibid.*, p. 372).

27. **Frullania tamarisci** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 13 (1835).

E. Arctic Occurrence.

3. N. Baffin: Navy Board Inlet (Lyall ex Hooker 1857, p. 120).[2]

28. **Gymnomitrium concinnatum** (Lightf.) Corda, in Sturm, Deutschl. Fl. fasc. 19, p. 23 (1829).

E. Arctic Occurrence.

2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 34).
4. C. Baffin: "common" (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1934 (B) 627 (in part), 628; Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 15).
8. N. Quebec: Wolstenholme, Polunin 1934 (B) 195 (in part), 198 (in part).

29. **Gymnomitrium corallioides** Nees, Naturg. europ. Leberm. I, p. 118 (1833).

Cesia corallioides (Nees) Carruth.

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 26). *South Coast,* Craig Harbour, Polunin 1934 (B) 830; Goose Fiord (Simmons ex Bryhn 1906, p. 26).
3. N. Baffin: Pond Inlet, Polunin 1934 (B) 669.
4. C. Baffin: Clyde, Polunin 1934 (B) 591 (in part), 627, 630. *Cumberland Gulf,* Pangnirtung, Polunin 1934 (B) 550 (in part), 582 (in part), 587.
5. S. Baffin: Dorset, Polunin 1934 (B) 274 (in part), 309.
7. N. Labrador: Burwell, Polunin 1931 and 1934 (B) incl. 451, 892.
8. N. Quebec: Wolstenholme, Polunin 1934 (B) 195 (in part), 198 (in part), 236 (in part), 237.

30. **Gymnomitrium crenulatum** Gottsche, in Gott. & Rabenh., Hep. Europ. exsicc. No. 478; in Carrington, Trans. Bot. Soc. Edinburgh, VII, p. 19 (1863).[3]

E. Arctic Occurrence.

3. N. Baffin: Pond Inlet, Polunin 1934 (B) 679.

Jungermannia divaricata "L".

This was long ago reported from C. Baffin (west side of Davis Strait) by Dickie (1869, p. 465). However, it is impossible, without reference to the actual specimen (which was collected by James Taylor), to know just what Dickie meant in using this name. Thus, according to Müller (1913, pp. 153-81), the *J. divaricata* of Nees v. Esenbeck is synonymous with *Cephaloziella rubella,* whereas that of Smith is *Cephaloziella starkii.* Both these have been reported from our area and are well known to the south, so the only thing to do is to discard Dickie's record, at least for the time being.

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[1] According to Mr. W. E. Nicholson (*in litt.*) this is most likely *F. pilosa* (Wahlenb.) Taylor, which is recorded by Müller (1907, p. 276) from Greenland. (November 1946—Professor A. W. Evans points out (*in litt.*) that *Fimbriaria pilosa* is a synonym of *Asterella ludwigii* (Schwaegr.) Underw. (*Fimbriaria ludwigii* (Schwaegr.) Limpr.), which has recently been confirmed from our area by Wynne and Steere (cited in Foreword, p. iv).)

[2] *Gymnocolea inflata* has recently been reported from N. Baffin: Strathcona Sound; and C. Baffin: Kingua Fiord—*See* Foreword, p. iv (November 1946.)

[3] I am indebted to Professor A. W. Evans of Yale University for the reference to this first valid publication of the present combination—Sept. 1946.

31. **Lepidozia setacea** (Web.) Mitten, Proc. Linn. Soc., Bot., V, p. 103 (1861).

var. **sphagnicola**[1] (Evans) Hesselbo, Mosses Coll. Fifth Thule Exped., p. 10 (1937).

Lepidozia sphagnicola Evans, Bull. Torrey Bot. Club, XX, p. 307 (1893), although upheld by some authors, was identified by Müller (1913, p. 287, "fide Original!") as a synonym of *L. setacea.* However, it appears to be distinct from the typical form of (although probably conspecific with) the latter, which Evans (*l.c.,* p. 308) himself admits "it somewhat resembles at first sight". Hesselbo (*l.c.*) evidently so considered it, for he wrote after *L. setacea* "var. *sphagnicola* (Evans)", so that even if he did not formally make the combination it seems permissible to attribute it to him.[1]

E. Arctic Occurrence.

3. N. BAFFIN: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 10).

32. **Lophozia alpestris** (Schleich.) Evans, in Kennedy & Collins, Rhodora, III, p. 181 (1901).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* near Fort Juliane, Skräling Island, Cape Viele, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 33). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 33). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 33).
2. DEVON, ETC., ISLANDS: North Kent Island (Simmons ex Bryhn 1906, p. 33).
3. N. BAFFIN: Arctic Bay, Polunin 1936 (F) 2576a-9, 2563-11 (in part).

33. **Lophozia atlantica** (Kaal.) "Schiffn., Krit. Bemerk. in Lotos, p. 46, reprint 1901".[2]

E. Arctic Occurrence.

3. N. BAFFIN: Pond Inlet, Polunin 1934 (B) 695, 696 (in part).
4. C. BAFFIN: Pangnirtung, Polunin 1934 (B) 510 (in part).
5. S. BAFFIN: Dorset, Polunin 1934 (B) 297 (in part).
8. N. QUEBEC: Wolstenholme, Polunin 1934 (B) 236 (in part).

34. **Lophozia attenuata** (Mart.) Dum., Rec. d'observ. sur les Jungerm., p. 17 (1835).

Schleicher's "*Jungermannia gracilis*" (1804) is, according to Professor Evans (1908, p. 187), a mere *nomen nudum,* appearing in a set of exsiccatae without diagnosis. Its first appearance as a validly published species was under the name of *Jungermannia attenuata* (Mart.) Lindenb., Syn. Hep., p. 48 (1829)—hence the present departure from the policy of Müller (cf. 1910, p. 652).

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[1] Professor Evans now writes (*in litt.*) that "*L. sphagnicola,* in my opinion, should be regarded as a simple synonym of *L. setacea*"—November 1946.

[2] This is according to MacVicar (1926, p. 198). The usual citation, and earliest that I have been able to confirm, is K. Müller, Rabenhorst's Krypt.-Fl. VI, 1, p. 652 (1910).

E. Arctic Occurrence.

4. C. Baffin: Pangnirtung, Polunin 1934 (B) 510 (in part).
5. S. Baffin: Dorset, Polunin 1934 (B) 297 (in part).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1934 (B) 165.

35. **Lophozia badensis** (Gott.) Schiffn., Krit. Bem. über europ. Leberm. III Serie, Lotos (reprint) p. 7 (1903).

E. Arctic Occurrence.

1. Ellesmere: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 32).

36. **Lophozia barbata** (Schmid.) Dum., Rec. d'observ. sur les Jungerm., p. 17 (1835).

Barbilophozia barbata (Schmid.) Loeske

E. Arctic Occurrence.

2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 34, sub syn. *Jungermannia barbata*).
3. N. Baffin: Pond Inlet ("Pond's Bay") (Lyall ex Hooker 1857, p. 120, sub syn. *Jungermannia barbata*). Arctic Bay, Polunin 1936 (F) 2563a-12.
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 465).

(Melville Peninsula: ? *no loc.* (Anon. ex Hooker 1825a, p. 420, sub syn. *Jungermannia barbata* = ? "*J. quinquedentata* Huds.").)

(Islands in Hudson, etc., Bays: ?[1] Island in northeast Hudson Bay (Bell ex Macoun 1884, p. 46DD, sub syn. *Jungermannia barbata*).)

37. **Lophozia binsteadii** (Kaal.) Evans, Ottawa Naturalist, XVII, p. 22 (1903).

Orthocaulis binsteadii (Kaal.) Buch

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 38). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 38).

38. **Lophozia excisa** (Dicks.) Dum., Rev. Jungerm., p. 17 (1835).

E. Arctic Occurrence.

1. Ellesmere: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 35).

39. **Lophozia floerkei** (Weber & Mohr) Schiffn., in Engler & Prantl, Natürl. Pflanzenfam. I, 3, p. 85 (1893).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Lastraea Valley, Twin Glacier Valley, and Fram Harbour (Simmons ex Bryhn 1906, p. 38).

40. **Lophozia harpanthoides** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 31 (1906).

Leiocolea harpanthoides (Bryhn & Kaalaas) Evans

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Skräling Island, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 32). *South Coast,* Fram, Harbour, and Goose

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[1] This record is queried because the specimen may possibly have come from Digges Island (cf. Macoun *l.c.*), which for phytogeographical purposes must be considered as belonging to N. Quebec (cf. Polunin 1940).

Fiords (Simmons ex Bryhn 1906, p. 32). *West Coast, etc.*, Lands End, Reindeer Cove, and Excrementbugten (Simmons ex Bryhn 1906, p. 32).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 32).
3. N. Baffin: Arctic Bay, Polunin 1936 (F) 2563a-11 (in part).

41. **Lophozia hatcheri** (Evans) Stephani, Spec. Hep. II, p. 151 (1902).

L. baueriana Schiffn.

Barbilophozia hatcheri (Evans) Loeske

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley and Fram Harbour (Simmons ex Bryhn 1906, p. 37). *South Coast,* Fram Fiord (Simmons ex Bryhn 1906, p. 37).

42. **Lophozia heterocolpos**[1] (Thed.) Howe, Mem. Torrey Bot. Club, VII, p. 108 (1899).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Viele, Lastraea Valley, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 30). *South Coast,* Harbour, Musk-ox, and Goose Fiords (Simmons ex Bryhn 1906, p. 30).

43. **Lophozia kunzeana** (Hüb.) Evans, Proc. Wash. Acad. Sci., II, p. 305 (1900).

Orthocaulis kunzeana (Hüb.) Buch

The report of this species in Bryhn's treatise (1906, p. 40) is from Greenland, but we still have one record from our area.

E. Arctic Occurrence.

3. N. Baffin: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 9).

44. **Lophozia lycopodioides** (Wallr.) Cogn., Bull. Soc. Roy. Bot. de Belgique, X, p. 278 (1872).

E. Arctic Occurrence.

8. N. Quebec: Stupart Bay (Bell ex Macoun 1902, p. 21—previously reported as Anon. ex Pearson 1890, p. 21, sub syn. *Jungermannia lycopodioides*).

45. **Lophozia marchica** (Nees) Stephani, Spec. Hep. II, p. 148 (1902).

Evidently very rare, as Bryhn remarks (1906, p. 36). His report is accepted without comment by Müller (1910, pp. 704-5), who, however, gives the northern limit in Europe as only 63 degrees north.

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord (Simmons ex Bryhn 1906, p. 36). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 36).

46. **Lophozia muelleri** (Nees) Dum., Rec. d'observ. sur les Jungerm., p. 17 (1835).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* near Fort Juliane, Beitstad Fiord, Cape Viele, and Twin Glacier Valley (Simmons ex Bryhn 1906, p. 29). *South Coast,* Fram and Goose Fiords (Simmons ex Bryhn 1906, p. 29). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 29).
3. N. Baffin: Pond Inlet, Polunin 1934 (B) 688.

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[1] Generally spelled "heterocolpa", but Thedenius (Kgl. Sv. Vet.-Akad. Handl., p. 52 (1838)) used the full Greek spelling in his original publication of the species under *Jungermannia* which, like *Lophozia,* is of feminine gender (cf. also Müller 1910, p. 727).

var. **bantryensis** (Hook.) Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 30 (1906).

Lophozia hornschuchiana (Nees) Macoun

The first publication of this combination seems to be in the "Fram" report cited above, although already in his long paper of 1893 Kaalaas had written (p. 357) of a *"Jungermannia Mülleri* var. *bantryensis"*.

E. Arctic Occurrence.

1. Ellesmere: Harbour Fiord (Simmons ex Bryhn 1906, p. 30).

47. **Lophozia obtusa** (Lindb.) Evans, Proc. Wash. Acad. Sci., II, p. 303 (1900).

Jungermannia obtusa Lindberg

Concerning this species in the north of our area Bryhn (1906, p. 32) wrote "Very rare. Sure examples were found only at Lastraea Valley" (*transl.*).

E. Arctic Occurrence.

1. Ellesmere: Lastraea Valley (Simmons ex Bryhn 1906, p. 32).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 14).

48. **Lophozia porphyroleuca** (Nees) Schiffn., Krit. Bemerk. über europ. Leberm. III Serie, Lotos No. 7, p. 61 (1903).

L. ventricosa (Dicks.) Dum. var. *porphyroleuca* (Nees) Hartm.

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Skräling Island and Eskimopolis (Simmons ex Bryhn 1906, p. 33).

49. **Lophozia quadriloba** (Lindb.) Evans, Proc. Wash. Acad. Sci., II, p. 304 (1900).

Orthocaulis quadrilobus (Lindb.) Buch

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Twin Glacier Valley (Simmons ex Bryhn 1906, p. 39). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 39).
3. N. Baffin: Arctic Bay, Polunin 1936 (F) 2563a-11 (in part).

var. **heterophylla** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 39 (1906).

Concerning this variety Müller wrote (1910, p. 643) "Sie wächst an manchen Standorten zusammen mit dem Typus", and for Ellesmere Bryhn reported (1906, p. 39) that it is "Much more common than the typical form" (*transl.*).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord, Lastraea Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 39). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 39). *West Coast,* Lands End and Reindeer Cove (Simmons ex Bryhn 1906, p. 39).
2. Devon, etc., Islands: North Kent Island (Simmons ex Bryhn 1906, p. 39).

50. **Lophozia quinquedentata** (Huds.) Cogn., Bull. Soc. Roy. Bot. de Belgique, X, p. 279 (1872).

Tritomaria quinquedentata (Huds.) Buch.

E. Arctic Occurrence.

1. ELLESMERE: Reporting on Simmons's material Bryhn (1906, p. 37) remarked "Very common in most of the stations investigated, but with perianths brought back only from Goose Fiord" (*free transl.*).
3. N. BAFFIN: Pond Inlet (Mathiassen ex Hesselbo 1937, p. 9).
4. C. BAFFIN: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 17).
6. MELVILLE PENINSULA: Igloolik (Freuchen ex Hesselbo 1937, p. 9). Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 9). Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 9). Vansittart Island (Freuchen ex Hesselbo 1937, p. 9).

51. **Lophozia ventricosa** (Dicks.) Dum., Rev. Jungerm., p. 17 (1835).

E. Arctic Occurrence.

1. ELLESMERE: *North Coast,* Wrangel Bay (Wolf ex Bryhn 1908, p. 14). *Grinnell Land* (Greely ex Lehnert and Greely 1886, p. 397, sub syn. *Jungermannia ventricosa*); concerning Simmons's material from farther south, Bryhn (1906, p. 32) wrote "Very common—occurring in one form or another in most of the stations investigated but found in fruit only at Cape Viele" (*free transl.*).
4. C. BAFFIN: Clyde, Polunin 1936 (F) 2604a-38 (in part); Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 17).
6. MELVILLE PENINSULA: Itividleriaq (Bangsted and Mathiassen ex Hesselbo 1937, p. 9). Vansittart Island (Freuchen ex Hesselbo 1937, p. 9).

52. **Lophozia violascens** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 36 (1906).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Bedford Pim Island (Simmons ex Bryhn 1906, p. 37). *South Coast,* Harbour Fiord (Simmons ex Bryhn 1906, p. 37).

53. **Lophozia wenzelii** (Nees) Stephani, Spec. Hep. II, p. 135 (1902).

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Eskimopolis, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 33). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 33).
9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island* (Mathiassen ex Hesselbo 1937, p. 9).

54. **Mannia pilosa** (Hornem.) Frye & Clark[1], Univ. Washington Publ. Biol., V, p. 60 (1937).

Grimaldia pilosa (Hornem.) Lindb.

E. Arctic Occurrence.

1. ELLESMERE: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 25).

55. **Marchantia polymorpha** L., Sp. Pl. ed. 1, p. 1137 (1753).

The numerous collections cited below are an indication of the conspicuousness rather than the actual abundance of this species in our area; nevertheless it is probably not rare anywhere except in the Far North.

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[1] Cf. Evans in Chronica Botanica, IV, 3, pp. 223-5 (1938).

E. Arctic Occurrence.

1. Ellesmere: *South Coast,* Craig Harbour, Polunin 1936 (F) 2487a-12; Goose Fiord (Simmons ex Bryhn 1906, p. 26).
2. Devon, etc., Islands: Devils and Castle Islands (Simmons ex Bryhn 1906, p. 26). Devon Island (Simmons ex Bryhn 1906, p. 26).
4. C. Baffin: *Cumberland Gulf* (Taylor ex Dickie 1869, p. 465), Pangnirtung, Polunin 1936 (F) 2613a-31.
5. S. Baffin: Lake Harbour, Polunin 1936 (F) 1170a-22; Dorset, Polunin 1934 and 1936 (H,B) 257, 2381a-38.
6. Melville Peninsula: Igloolik (Edwards ex Hooker 1825a, p. 420).
7. N. Labrador: Burwell, Polunin 1931, 4, and 6 (F,B,X).
8. N. Quebec: Wakeham Bay, Polunin 1936 (F) 1479a-6. Wolstenholme, Polunin 1934 and 6 (H,B) 201, 235, 1297a-7.
9. Islands in Hudson, etc., Bays: Akpatok Island, Polunin 1931 (B). Southampton Island or near (Lyon ex Hooker 1825b, p. 198).

? *Marsupella emarginata* (Ehrh.) Dum., Comm. bot., p. 114 (1835).

This was reported by Dickie (1869, p. 465, sub syn. "*Sarcoscyphus Ehrhardti,* Corda"—sic) as having been collected by Taylor in Baffin, but it seems wisest to query such a single old record of a temperate and rather low-alpine plant that is not otherwise known in the Arctic.[1] May not the next (typically arctic) species have been meant instead?

56. **Marsupella groenlandica** C. Jensen, Medd. om Grønland, XXX, p. 291 (1906).

M. arctica (Berggr.) Bryhn & Kaalaas

Sarcoscyphus emarginatus (Ehrh.) Hartm. var. *arcticus* Berggr.

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Viele, Lastraea Valley, and Cape Rutherford (Simmons ex Bryhn 1906, p. 27). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 27).
5. S. Baffin: Lake Harbour, Polunin 1936 (F) 1258a-3.
8. N. Quebec: Wolstenholme, Polunin 1936 (F) 2250c-1 ("In part. Apparently the first record for the mainland"—*scr.* A. W. Evans).

57. **Mesoptychia sahlbergii** (Lindb. & Arnell) Evans, Ottawa Naturalist, XVII, p. 15 (1903).

Lophozia sahlbergii (Lindb. & Arnell) Stephani

This rare and peculiar species, originally described from the Yenisei region of Siberia, has been found only twice in our area.

E. Arctic Occurrence.

1. Ellesmere: *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 40). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 40).

58. **Odontoschisma macounii** (Aust.) Underw., Bull. Ill. State Lab. Nat. Hist., II, p. 92 (1884).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Viele, Lastraea Valley, Twin Glacier Valley, Cape Rutherford, Bedford Pim Island, and Fram Harbour (Simmons ex Bryhn 1906, p. 42). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 42). *West Coast,* Lands End (Simmons ex Bryhn 1906, p. 42).
7. N. Labrador: Burwell, Polunin 1934 (B) 906.

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[1] Recently confirmed from 8. N. Quebec: Wolstenholme—*See* Foreword, p. iv. (November 1946.)

59. **Plagiochila arctica** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 41 (1906).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Beitstad Fiord and Cape Rutherford (Simmons ex Bryhn 1906, p. 42). *South Coast,* Fram, Harbour, and Goose Fiords (Simmons ex Bryhn 1906, p. 42). *West Coast,* Reindeer Cove (Simmons ex Bryhn 1906, p. 42).
2. Devon, etc., Islands: North Kent Island (Smmons ex Bryhn 1906, p. 42).

60. **Plagiochila asplenioides** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

Missing the earlier report of Hooker (1857, p. 120), Bryhn (1906, p. 42) says "Plagiochila asplenioides er i det arktiske Amerika kjendt kun fra Alaska og har sin hidtil kjendte Nordgraendse i Finmarken ved 70°". Fortunately there is a recent confirmatory report from our area by Hesselbo (1937, p. 10).

E. Arctic Occurrence.

3. N. Baffin: Pond Inlet ("Pond's Bay") (Lyall ex Hooker 1857, p. 120).
6. Melville Peninsula: Vansittart Island (Freuchen ex Hesselbo 1937, p. 10).

61. **Pleuroclada albescens** (Hook.) Spruce, On Cephalozia, p. 78 (1882).

var. **islandica** (Nees) Spruce, On Cephalozia, p. 79 (1882).

E. Arctic Occurrence.

4. C. Baffin: (Taylor ex Dickie 1869, p. 465, "West Side, rare", sub syn. *Jungermannia islandica*).

62. **Pleuroschisma tricrenatum** (Wahlenb.) Dum., Syll. Jung., p. 70 (1831).

Bazzania triangularis (Schleich.) R. Br.

This species has only been found once in our area.

E. Arctic Occurrence.

1. Ellesmere: Harbour Fiord (Simmons ex Bryhn 1906, p. 46).

63. **Preissia quadrata** (Scop.) Nees, Naturg. europ. Leberm. IV, p. 135 (1838).

P. commutata (Lindenb.) Nees

Chomocarpon commutatus (Lindenb.) Lindenb.

Lindenberg's *Marchantia commutata* (Hep. Eur., p. 101 (1829)) was easily preceded by Scopoli's *M. quadrata* (Fl. Carn., p. 120 (1760)). The two being conspecific according to most authors, if perhaps not identical, the name to be used is clearly that given above.

E. Arctic Occurrence.

1. Ellesmere: Harbour Fiord (Simmons ex Bryhn 1906, p. 25).
2. Devon, etc., Islands: Wellington Channel (Lyall ex Hooker 1857, p. 120).
9. Islands in Hudson, etc., Bays: *Southampton Island,* South Bay, Polunin 1934 (B) 142.

I have also found this species on the east coast of Hudson Bay a little to the south of our area—Port Harrison, Quebec, 1936 (F) Nos. 1569a-41 and 1669a-2, both *fide* A. W. Evans.

64. **Ptilidium ciliare** (L.) Hampe, Prod. Fl. Herc., p. 76 (1836).

One of our commonest Liverworts, occurring on ice-free land apparently throughout the Canadian Eastern Arctic; southwards I have found it to be abundant at least to Cartwright in southern Labrador. However, it is largely confined to "late-snow" areas and, like the other plants of such habitats, tends to be overlooked by most collectors.

E. Arctic Occurrence.

1. ELLESMERE: *Hayes Sound region,* Twin Glacier Valley and Bedford Pim Island (Simmons ex Bryhn 1906, p. 47). *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 47).
2. DEVON, ETC., ISLANDS: *Devon Island,* Philpots Island (Philpotts ex Dickie 1871, p. 34); Dundas Harbour, Polunin 1936 (F) 2498a-20; between Beechey Island and Northumberland Sound (Lyall ex Hooker 1857, p. 120).
3. N. BAFFIN: Pond Inlet, Polunin 1934 (B) 696 (in part). Arctic Bay, Polunin 1936 (F,X) 2563a-13.
4. C. BAFFIN: "common" (Taylor ex Dickie 1869, p. 465); Clyde, Polunin 1934 (B) 626. *Cumberland Gulf,* Pangnirtung, Polunin 1934 (B) 550 (in part).
5. S. BAFFIN: Lake Harbour, Polunin 1934 (B) 411 (in part).
6. MELVILLE PENINSULA: *no loc.* (Edwards ex Hooker 1825a, p. 420[1]). Vansittart Island (Freuchen ex Hesselbo 1937, p. 10.)
7. N. LABRADOR: *Chidley Peninsula* (MacGregor ex Anon. 1907, p. 86).
8. N. QUEBEC: Wakeham Bay, Polunin 1936 (F) 1480b-26. Wolstenholme, Polunin 1934 (B) 191; Digges Island (Bell ex Macoun 1902, p. 36).
9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B). Nottingham Island (Bell ex Pearson 1890, p. 8). *Southampton Island,* South Bay, Polunin 1934 and 6 (F,B,X), (Sutton ex Jennings 1936, p. 15).

65. **Sauteria alpina** Nees, Naturg. europ. Leberm. IV, p. 143 (1838).

E. Arctic Occurrence.

9. ISLANDS IN HUDSON, ETC., BAYS: Akpatok Island, Polunin 1931 (B) in late-snow area—cf. Polunin (1934b, pp. 388 and 389).

66. **Scapania aequiloba** (Schwaegr.) Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

E. Arctic Occurrence.

1. ELLESMERE: Fram Harbour (Simmons ex Bryhn 1906, p. 50).

67. **Scapania aspera** M. & H. Bernet, in H. Bernet, Cat. des Hép. du S.-Ouest de la Suisse, p. 42 (1888).

This species is reported on the good authority of Mr. W. R. Sherrin's determination, although it is said by Bernet (*l.c.* pp. 42-3) to grow "sur les rochers calcaires ombragés dans les éboulis au pied des montagnes. . . Ne s'élève pas aussi haut que le Sc. aequiloba, atteint à peine la région des sapins".

E. Arctic Occurrence.

4. C. BAFFIN: Clyde, Polunin 1934 (B) 591 (in part).

68. **Scapania compacta** (Roth) Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

This species again, like the last two, has been reported only once from our area. As Mr. W. E. Nicholson has pointed out (*in litt.*), it is a plant chiefly of southern distribution.

E. Arctic Occurrence.

9. ISLANDS IN HUDSON, ETC., BAYS: *Southampton Island,* South Bay (Sutton ex Jennings 1936, p. 15).

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[1] Reported as *Jungermannia ciliaris* and noted by Hooker (1825a, p. 420) "=*J. pulcherrima* Schwaegr." To this claim, however, most authors would be opposed—cf. Evans 1906, pp. 42-3.

69. **Scapania curta** (Mart.) Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

Martinella curta (Mart.) Lindb.

E. Arctic Occurrence.

4. C. Baffin: Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 20).

var. **rosacea** (Corda) Carrington, Brit. Hep., p. 87 (1875).

Scapania rosacea (Corda) Dum.

According to Mr. W. E. Nicholson (*in litt.*) these northern specimens are probably "*Scapania scandica* (Arnell & Buch) MacVicar".

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Viele, Cape Rutherford, and Bedford Pim Island (Simmons ex Bryhn 1906, p. 50).

70. **Scapania cuspiduligera** (Nees) K. Müller, Rabenhorst's Krypt.-Fl., VI, 2, p. 472 (1915).

S. bartlingii Hampe

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Viele and Lastraea Valley (Simmons ex Bryhn 1906, p. 49).

71. **Scapania irrigua** (Nees) Dum., Rec. d'observ. sur les Jungerm., p. 15 (1835).

E. Arctic Occurrence.

4. C. Baffin: Pangnirtung, Polunin 1934 (B) 581 (in part).

var. **remota** (Kaal.) K. Müller, Rabenhorst's Krypt.-Fl., VI, 2, p. 421 (1915).

Scapania irrigua (Nees) Dum. var. *alpina* Bryhn

E. Arctic Occurrence.

1. Ellesmere: Goose Fiord (Simmons ex Bryhn 1906, p. 50).

72. **Scapania mucronata** Buch, Medd. Soc. pro F. Fl. Fennica, XLII, p. 91 (1916).

E. Arctic Occurrence.

6. Melville Peninsula: Cape Elizabeth (Bangsted ex Hesselbo 1937, p. 10). Vansittart Island (Freuchen ex Hesselbo 1937, p. 10).

73. **Scapania nemorosa** Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

E. Arctic Occurrence.

4. C. Baffin: (Taylor ex Dickie 1869, p. 465 "common").
8. N. Quebec: Digges Island (Bell ex Macoun 1902, p. 39)[1].

74. **Scapania simmonsii** Bryhn & Kaalaas, in Bryhn, Rept. Second Norwegian Arctic Exped. Fram, No. 11, p. 51 (1906).

E. Arctic Occurrence.

1. Ellesmere: *South Coast,* Harbour and Goose Fiords (Simmons ex Bryhn 1906, p. 51).

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[1] *Scapania paludicola* has recently been reported from N. Baffin: Pond Inlet—*See* Foreword, p. iv. (November 1946.)

75. **Scapania undulata** (L.) Dum., Rec. d'observ. sur les Jungerm., p. 14 (1835).

E. Arctic Occurrence.

1. Ellesmere: Cape Rutherford (Simmons ex Bryhn 1906, p. 50).
5. S. Baffin: Dorset, Polunin 1934 (B) 274 (in part).
8. N. Quebec: Wolstenholme, Polunin 1936 (F) 2250c-1.

76. **Sphenolobus groenlandicus** (Nees) Stephani, Spec. Hep. II, p. 164 (1902).[1]

Lophozia murmanica Kaalaas

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Cape Rutherford (Simmons ex Bryhn 1906, p. 35). *South Coast,* Goose Fiord (Simmons ex Bryhn 1906, p. 35).

77. **Sphenolobus minutus** (Crantz) Stephani, Spec. Hep. II, p. 157 (1902).

Jungermannia minuta Crantz

E. Arctic Occurrence.

1. Ellesmere: Reported by Bryhn (1906, p. 40) to be very common in most of the stations investigated by Simmons, although 'fruiting' examples were brought back only from Cape Viele (Hayes Sound region) and Goose Fiord (South Coast).
2. Devon, etc., Islands: Philpots Island (Philpotts ex Dickie 1871, p. 34).
3. N. Baffin: Pond Inlet (Freuchen ex Hesselbo 1937, p. 9).
4. C. Baffin: *no loc.* (Taylor ex Dickie 1869, p. 465 "common"); Exeter Sound (Seidenfaden ex Harmsen and Seidenfaden 1932, p. 18).
6. Melville Peninsula: *no loc.* (Edwards ex Hooker 1825a, p. 420); Cape Elizabeth (Elizabeth Point) (Bangsted ex Hesselbo 1937, p. 9). *Vansittart Island* (Freuchen ex Hesselbo 1937, p. 9); Danish Island (Freuchen ex Hesselbo 1937, p. 9).
9. Islands in Hudson, etc., Bays: Nottingham Island (Bell ex Macoun 1902, p. 23, sub syn. *Lophozia minuta*). Southampton Island (Mathiassen ex Hesselbo 1937, p. 9).

78. **Sphenolobus politus** (Nees) Stephani, Spec. Hep. II, p. 169 (1902).

E. Arctic Occurrence.

1. Ellesmere: *Hayes Sound region,* Lastraea Valley and Fram Harbour (Simmons ex Bryhn 1906, p. 40 "very rare").

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[1] It should be noted that this is by Müller (1916, p. 763) considered a synonym of *Lophozia wenzelii* (q.v.).

[2] For some recent additional publications—*See* Foreword pp. iii-iv.

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SUMMARY

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The following tables show the presence (indicated by a "1") or apparent 'absence' in each of the ten major subdivisions of our area (*See* General Introduction) of each recorded cryptogamic species. The tables have been compiled from the seven papers comprising the present volume; they thus maintain the limitation of these papers in being partly bibliographical, although anywhere that doubt has been expressed as to the validity of a published record or fresh identification a "?" is substituted for the usual "1". Many of the definitely delimited varieties and other forms are also listed in the tables, although where a second or third entity belonging to the same species is listed from a particular geographical subdivision, any lower "1" is italicized.

The lists of Marine Phytoplankton, Diatomeae, Lichenes, Musci, and Hepaticae are fully up-to-date in attempting to include all properly localized and authenticated records known from the area at the time of writing (February 1939), whether these have been previously published or result simply from recent collections. The lists of Algae and Fungi are, however, based merely on my own small collections made during my two latest expeditions into the region, although this deficiency is to some extent made good by the account of pertinent exploration and literature that is to be found in the introduction to each paper. Further combing of the literature led to additions, which are given in the General Introduction.

The total flora of different cryptogamic *species* recorded in this work as occurring in the Canadian Eastern Arctic numbers 1,430.[1] The contributions of the seven groups that were dealt with by different specialist authors are as follows: Algae 383, Marine Phytoplankton 121,[1,2], Freshwater Diatomeae 192,[2] Fungi 79, Lichenes 275,[1] Musci 304,[1] and Hepaticae 78.[1]

None of these figures may be regarded as anything like complete; indeed our knowledge of the cryptogams of the region is still little more than fragmentary, although I hope it will now be found considerably more detailed and useful than was the case when this work was started. A vast amount of exploratory and other investigation still remains to be done, as is well evidenced by two facts indicated at the end of the tables, viz.: (1) that the number of cryptogamic species recorded from any major district in our area has no apparent relation to its size or latitude, but only to the amount of biological field-work that has been carried out within its bounds; and (2) that certain of the major districts, which generally comprise some tens of thousands of square miles of land alone, still remain without any records at all of some of the ubiquitous cryptogam groups.

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[1] To these totals should now be added the 5 Lichenes, 10 Musci (including 2 confirmations), and 4 Hepaticae (including 2 confirmations) mentioned in the Foreword (pp. iii-iv) as subsequently added to the known flora of the region, and 4 marine planktonic Diatomeae which we previously overlooked; moreover it should be remembered that our lists of general Algae and of Fungi do not include previous reports—November 1946.

[2] *Achnanthes hyperborea* Grunow and *Melosira sulcata* (Ehrenb.) Kützing occurred in both these lists (the *Achnanthes* only somewhat doubtfully among the freshwater Diatomeae).

1. *Algae*[1]

——	1	2	3	4	5	7	8	9	10
CYANOPHYCEAE									
1. *Chroococcus limneticus* Lemmerm.					1				
2. *C. minutus* (Kütz.) Nägeli			1		1				
3. *C. turgidus* (Kütz.) Nägeli			1	1	1	1	1		1
4. *Gloeocapsa compacta* Kütz					1				
5. *G. crepidinum* Thuret				1					
6. *G. decorticans* (A. Br.) "P. Richt."					1				
7. *G. fuscolutea* (Nägeli) Kütz		1							
8. *G. kuetzingiana* Nägeli							1		
9. *G. montana* Kütz		1							
10. *G. punctata* Nägeli					1				1
11. *G. ralfsiana* (Harv.) Kütz					1				
12. *G. rupestris* Kütz							1		
13. *G. rupicola* Kütz					1				
14. *Aphanocapsa elachista* W. & G. S. West					1				
15. *A. grevillea* (Hass.) Rabenhorst		1	1	1	1		1		
16. *A. muscicola* (Menegh.) Wille		1			1				
17. *A. pulchra* (Kütz.) Rabenhorst			1		1		1		1
18. *A. rivularis* (Carm.) Rabenhorst									1
19. *A. roeseana* de Bary					1				
20. *A. arctica* Whelden				1					
21. *Microcystis elabens* Kütz.					1		1		
and var. *minor* Nygaard					*1*				
22. *M. firma* (Bréb. & Lenorm.) Schmidle							1		
23. *M. flos-aquae* (Wittr.) Kirchn		1					1		
24. *M. holsatica* Lemmerm				1					
25. *M. pulverea* (Wood) Forti		1			1				1
26. *M. robusta* (Clark) Nygaard			1						
27. *Merismopedia elegans* A. Br				1					
28. *M. glauca* (Ehrenb.) Nägeli		1	1	1	1		1		1
29. *M. minima* G. Beck					1				
30. *M. punctata* Meyen			1		1				1
31. *M. tenuissima* Lemmerm			1		1				1
32. *Gloeothece confluens* Nägeli			1						1
33. *G. palea* (Kütz.) Rabenhorst					1				
34. *G. rupestris* (Lyngb.) Bornet var. *maxima* (W. West) Geitler			1				1		
35. *Aphanothece castagnei* (Bréb.) Rabenhorst				1	1		1		
36. *A. clathrata* W. & G. S. West					1				
37. *A. microscopica* Nägeli									1
38. *A. saxicola* Nägeli			1		1		1		1
39. *A. stagnina* (Spreng.) A. Br			1			1	1		
40. *Gomphosphaeria aponina* Kütz			1						
41. *Oncobyrsa cesatiana* Rabenhorst							1		
42. *Clastidium cylindricum* Whelden			1						
43. *Chamaesiphon cylindricus* Boye Petersen				1					1
44. *C. incrustans* Grunow				1	1	1			1
and var. *elongatus* Starmach				*1*					
45. *Oscillatoria irrigua* Kütz.[2]				1					

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[1] Except Marine Phytoplankton and Freshwater Diatomeae, which follow in separate lists. Any doubts as to whether or not an author's name is contracted in these tables may be settled by reference to the general text. (N.P.)

[2] It must not be forgotten that, as with the *Oedogoniaceae* and *Desmidiaceae*, many of the older citations still in common use in this and the following fourteen genera are illegal, as is indicated by their enclosure in square brackets in the general text. (N.P.)

——	1	2	3	4	5	7	8	9	10
46. *O. limosa* Agardh							1		
47. *O. tenuis* Agardh	1		1	1	1				
48. *Phormidium inundatum* Kütz			1						
49. *P. retzii* (Agardh) Gomont	1				1				
50. *Lyngbya aerugineo-caerulea* (Kütz.) Gomont						1			
51. *L. epiphytica* Hieron				1					
52. *L. lagerheimii* (Möb.) Gomont				1					
53. *L. lutea* (Agardh) Gomont				1					
54. *L. nana* Tilden				1					1
55. *L. nordgardii* Wille						1			
56. *L. ochracea* Thuret				1					
57. *L. pusilla* (Rabenhorst) Hansgirg			1						
58. *L. rigidula* (Kütz.) Hansgirg			1						
59. *L. stagnina* Kütz				1					
60. *L. subtilis* W. West							1		
61. *L. versicolor* (Wartm.) Gomont				1					
62. *Symploca muscorum* (Agardh) Gomont				1					
63. *Microcoleus vaginatus* (Vauch.) Gomont			1		1				
64. *Schizothrix braunii* (A. Br.) Gomont				1					
65. *S. calcicola* (Agardh) Gomont			1						
66. *S. fuscescens* Kütz					1		1		
67. *S. lardacea* (Ces.) Gomont							1		
68. *S. vaginata* (Nägeli) Gomont					1				
69. *Anabaena variabilis* Kütz									1
70. *Nostoc aureum* Kütz			1		1				
71. *N. commune* Vaucher		1	1		1	1	1		1
72. *N. kihlmani* Lemmerm									1
73. *N. linckia* (Roth) Bornet					1				
74. *N. minutum* Desmazières					1				
75. *N. paludosum* Kütz		1							
76. *N. pruniforme* Agardh					1				
77. *N. sphaericum* Vaucher					1	1			
78. *N. sphaeroides* Kütz		1							
79. *Scytonema crustaceum* Agardh		1							
80. *S. myochrous* (Dillw.) Agardh						1			
81. *S. ocellatum* Lyngbye							1		
82. *Tolypothrix bouteillei* (Bréb. & Desm.) Lemmerm		1							
83. *T. distorta* Kütz							1		
and var. *penicillata* (Agardh) Lemmerm			1		1		*1*		
84. *T. lanata* (Desv.) Wartmann					1				1
85. *T. limbata* Thuret			1	1	1		1		1
86. *T. tenuis* Kütz		1	1		1		1		1
and f. *minor* Polunin									*1*
87. *Plectonema tomasinianum* Bornet var. *gracile* Hansgirg				1	1				
88. *Stigonema informe* Kütz					1		1		1
89. *S. mamillosum* (Lyngb.) Agardh					1				
90. *S. minutum* (Agardh) Hassall					1				
91. *S. ocellatum* Thuret			1						
92. *S. turfaceum* (Berk.) Cooke			1			1			
93. *Calothrix borealis* Whelden			1						
94. *C. braunii* Bornet & Flahault					1				
95. *C. contarenii* (Zan.) Bornet & Flahault									1
96. *C. fusca* (Kütz.) Bornet & Flahault					1		1		1
97. *C. parietina* Thuret					1		1		
98. *C. pulvinata* (Mertens) Agardh				1					

—	1	2	3	4	5	7	8	9	10
99. *Dichothrix baueriana* (Grunow) Bornet & Flahault					1				
100. *D. compacta* Bornet & Flahault					1				
101. *D. gypsophila* (Kütz.) Bornet & Flahault					1				1
102. *D. horsfordii* (Wolle) Bornet					1				
103. *D. orsiniana* (Kütz.) Bornet & Flahault							1		
104. *D. rupicola* Collins									1
105. *Rivularia biasolettiana* Meneghini		1			1				
106. *R. compacta* Collins		1			1				
107. *R. dura* Roth			1		1				
108. *R. minutula* (Kütz.) Bornet & Flahault					1				
and var.?					*1*				
HETEROKONTAE									
109. *Ophiocytium parvulum* (Perty) A. Br.				1	1				
CHRYSOPHYCEAE									
110. *Dinobryon marchicum* Lemmerm.			1						
111. *D. sertularia* Ehrenberg			1	1	1		1		
112. *D. tabellariae* (Lemmerm.) Pascher							1		
CHLOROPHYCEAE									
113. *Gonium pectorale* Müller					1				
114. *Sphaerella nivalis* (Bauer) Sommerfelt						1	1		1
115. *Gloeocystis gigas* (Kütz.) Lagerheim					1		1		1
116. *Palmodictyon varium* (Nägeli) Lemmerm.							1		
117. *Apiocystis brauniana* Nägeli									1
118. *Tetraspora lubrica* (Roth) Agardh			1						1
119. *Ulothrix flacca* (Dillw.) Thuret				1	1	1	1		1
120. *U. implexa* Kütz.		1							
121. *U. laetevirens* (Kütz.) Collins		1							
122. *U. speciosa* (Carm.) Kütz.				1		1			
123. *U. tenerrima* Kütz.					1				
124. *U. zonata* (Web. & Mohr) Kütz.			1						
125. *Uronema confervicolum* Lagerheim							1		
126. *Stichococcus subtilis* (Kütz.) Klercker						1			
127. *Geminella interrupta* Turpin			1						
128. *Microspora pachyderma* (Wille) Lagerheim				1					
129. *M. quadrata* Hazen				1					
130. *M. stagnorum* (Kütz.) Lagerheim			1	1		1	1		
131. *M. willeana* Lagerheim			1	1			1		
132. *Draparnaldia glomerata* (Vauch.) Agardh							1		
133. *D. plumosa* (Vauch.) Agardh				1					
134. *Aphanochaete repens* A. Br.			1				1		
135. *Coleochaete scutata* de Brébisson					1				
136. *Trentepohlia iolithus* (L.) Wallroth					1				
137. *Cladophora arcta* (Dillw.) Kütz.				?		1			
138. *C. hystrix* (Strömf.) De Toni				1					
139. *C. kuetzingiana* Grunow									1

——	1	2	3	4	5	7	8	9	10
140. *Rhizoclonium hieroglyphicum* (Agardh) Kütz						1			
and var. *horsfordii* (Wolle) Collins					1				
141. *R. riparium* (Roth) Harvey var. *implexum* (Dillw.) Rosenvinge						1			
and var. *validum* (Gobi) Foslie				1					
142. *Hormiscia penicilliformis* (Roth) Fries				1					
143. *Chaetomorpha tortuosa* Kütz					1				
144. *Oedogonium* sp		1	1	1	1	1		1	1
145. *Bulbochaete intermedia* de Bary					1		1		
146. *B. basispora* Wittrock & Lundell					1				
147. *B. repanda* Wittrock							1		
148. *Enteromorpha intestinalis* (L.) Link				1					1
149. *E. micrococca* Kütz		1			1				
150. *E. minima* Nägeli		1							
151. *E. prolifera* (Müll.) J. G. Agardh var. *arctica* (J. Agardh) Collins				1					
and var. *trabeculata* Rosenvinge		1							
152. *E. ramulosa* (J. E. Sm.) Hooker			1		1	1			
153. *Monostroma fuscum* (Postels & Ruprecht) Wittrock				1					
154. *Prasiola crispa* (Lightf.) Meneghini			1	1		1			
155. *Pediastrum boryanum* (Turpin) Meneghini							1		1
and var. *longicorne* Raciborski							*1*		
156. *P. tetras* (Ehrenb.) Ralfs				1					
157. *Oocystis borgei* Snow			1	1					1
158. *O. elliptica* W. West			1				1		1
159. *O. gloeocystiformis* Borge									1
160. *O. naegelii* A. Br			1						1
161. *O. nodulosa* W. & G. S. West			1						
162. *Ankistrodesmus falcatus* (Corda) Ralfs			1	1	1				1
163. *Closteriopsis brevicula* Whelden								1	
164. *Scenedesmus bernardii* G. M. Smith					1				
165. *S. bijugus* (Turpin) Lagerheim									1
166. *S. obliquus* (Turpin) Kütz									1
167. *S. quadricaudus* (Turpin) de Brébisson							1		
168. *Vaucheria* sp						1			
169. *Mougeotia* sp	1	1	1	1	1	1	1		
170. *Zygnema cyanospermum* Cleve							1		
171. *Z. peliospermum* Wittrock									1
172. *Spirogyra inflata* (Vauch.) Rabenhorst var. *foveolata* Transeau							1		
173. *Gonatozygon kinaharii* (Arch.) Rabenhorst				1					
174. *G. monotaenium* de Bary			1						1
175. *Cylindrocystis brebissonii* Meneghini				1					
176. *Penium cylindrus* (Ehrenb.) de Brébisson						1			1
177. *P. libellula* (Focke) Nordstedt var. *intermedium* Roy & Biss				1					
178. *P. margaritaceum* (Ehrenb.) de Brébisson									1
179. *P. spirostriolatum* Barker					1				
180. *P. truncatum* de Brébisson			1						
181. *Closterium abruptum* W. West			1	1			1		
182. *C. cornu* Ehrenberg			1						
183. *C. cynthia* De Notaris			1						
184. *C. decorum* de Brébisson			1						

——	1	2	3	4	5	7	8	9	10
185. *C. dianae* Ehrenberg					1				1
and var. *arcuatum* (Bréb.) Rabenhorst					*1*				
186. *C. didymotocum* Corda									1
187. *C. ehrenbergii* Meneghini var. *malinvernianum* (De Not.) Rabenhorst		1							
188. *C. jenneri* Ralfs		1			1		1		
and var. *robustum* G. S. West					*1*				
189. *C. kuetzingii* de Brébisson					1				
190. *C. lanceolatum* Kütz									1
191. *C. macilentum* de Brébisson			1						
192. *C. moniliferum* (Bory) Ehrenberg			1			1			
193. *C. parvulum* Nägeli		1	1	1			1		1
194. *C. pusillum* Hantzsch var. *major* Raciborski				1					
195. *C. ralfsii* de Brébisson var. *hybridum* Rabenhorst			1						1
196. *C. rostratum* Ehrenberg				1					1
197. *C. striolatum* Ehrenberg				1	1		1		1
198. *C. toxon* W. West					1				
199. *C. venus* Kütz			1	1	1				
200. *Pleurotaenium ehrenbergii* (Bréb.) de Bary					1				1
201. *P. trabecula* (Ehrenb.) Nägeli					1				
202. *P. truncatum* (Bréb.) Nägeli		1							1
203. *Tetmemorus laevis* (Kütz) Ralfs					1				
204. *Euastrum ausatum* Ralfs		1			1				1
205. *E. bidentatum* Nägeli		1			1		1		1
206. *E. binale* (Turpin) Ehrenberg				1	1	1	1		
and var. *sectum* Turner			1				*1*		
and var. *gutwinskii* Schmidle							*1*		1
207. *E. didelta* (Turpin) Ralfs			1		1				
208. *E. dubium* Nägeli					1		1		
and var. *snowdoniense* (Turner) W. & G. S. West						1			
209. *E. elegans* (Bréb.) Kütz					1		1		
210. *E. gemmatum* de Brébisson					1				
211. *E. inerme* (Ralfs) Lundell							1		
212. *E. montanum* W. & G. S. West							1		
213. *E. pectinatum* de Brébisson					1				1
and var. *brachylobum* Wittrock					*1*				
214. *E. pinnatum* Ralfs					1				
215. *E. rostratum* Ralfs							1		
216. *E. turneri* W. West					1				
217. *E. verrucosum* Ehrenberg					1				1
and var. *reductum* Nordstedt									*1*
218. *Cosmarium abbreviatum* Raciborski var. *planctonicum* W. & G. S. West		1							
219. *C. anceps* Lundell			1				1		
220. *C. angulosum* de Brébisson					1				
221. *C. annulatum* (Nägeli) de Bary						1			
222. *C. arctoum* Nordstedt			1				1		1
223. *C. baffinensis* Whelden				1					
224. *C. bioculatum* de Brébisson			1	1			1		
and var. *hians* W. & G. S. West					1				
225. *C. biretum* de Brébisson							1		1
226. *C. blyttii* Wille					1				
227. *C. botrytis* Meneghini		1	1		1	1	1		1
and var. *mediolaeve* W. West						*1*			

——	1	2	3	4	5	7	8	9	10
228. *C. conspersum* Ralfs							1		1
and f. *minor* Borge									*1*
and var. *latum* (Bréb.) W. & G. S. West					1				
229. *C. costatum* Nordstedt					1		1		
230. *C. crenatum* Ralfs							1		1
and f. *boldtiana* (Gutw.) W. & G. S. West						1			
231. *C. cucumis* (Corda) Ralfs				1	1		1		
232. *C. cucurbita* de Brébisson			1			1	1		
233. *C. cucurbitinum* (Biss.) Lütkemüller					1				1
234. *C. curtum* (Bréb.) Ralfs	1	1	1	1					
235. *C. cyclicum* Lundell var. *arcticum* Nordstedt						1			
and var. *nordstedtianum* (Reinsch) W. & G. S. West							1		
and var. *crassum* Whelden				1					
236. *C. cymatopleurum* Nordstedt						1			
237. *C. debaryi* Archer							1		
238. *C. depressum* (Nägeli) Lundell var. *achondrum* (Boldt) W. & G. S. West									1
239. *C. furcatospermum* W. & G. S. West					1				
240. *C. granatum* de Brébisson			1		1		1		1
and var. *subgranatum* Nordstedt			1						
241. *C. hammeri* Reinsch									1
and var. *protuberans* W. & G. S. West						1			
242. *C. holmiense* Lundell		1	1		1				
and var. *integrum* Lundell		*1*	*1*		*1*		1		1
243. *C. holmii* Wille									1
244. *C. humile* (Gay) Nordstedt					1				1
and var. *glabrum* Gutwinski					*1*				*1*
and var. *striatum* (Boldt) Schmidle									*1*
245. *C. impressulum* Elfving									1
246. *C. inconspicuum* W. & G. S. West					1				
247. *C. isthmium* W. West					1				1
248. *C. kjellmani* Wille									1
249. *C. laeve* Rabenhorst		1							
250. *C. meneghinii* de Brébisson			1		1	1			
251. *C. notabile* de Brébisson						1			
252. *C. obtusatum* Schmidle						1			
253. *C. ochthodes* Nordstedt							1		1
254. *C. parvulum* de Brébisson			1		1				
255. *C. paucigranulatum* Whelden				1					
256. *C. phaseolus* de Brébisson			1		1		1		1
257. *C. plicatum* Reinsch					1	1			
and var. *hibernicum* W. West		1	1						
258. *C. poluninii* Whelden				1					
259. *C. polygonum* (Nägeli) Archer					1				
260. *C. porkornyanum* (Grun.) W. & G. S. West		1							1
261. *C. praemorsum* de Brébisson					1				
262. *C. pseudopyramidatum* Lundell					1				
263. *C. punctulatum* de Brébisson			1		1				1
264. *C. pycnochondrum* Nordstedt					1	1			
265. *C. pyramidatum* de Brébisson						1			
266. *C. quadratum* Ralfs			1		1		1		
and f. *willei* W. & G. S. West									1
267. *C. ralfsii* de Brébisson		1			1	1	1		
and var. *montanum* Raciborski							*1*		
268. *C. rectangulare* Grunow			1						

——	1	2	3	4	5	7	8	9	10
269. *C. regnesi* Reinsch							1		1
270. *C. reinschii* Archer							1		
271. *C. reniforme* (Ralfs) Archer			1						1
272. *C. sexangulare* Lundell							1		1
and f. *minima* Nordstedt					1				
273. *C. speciosum* Lundell		1	1			1	1		
and var. *simplex* Nordstedt			*1*		1				
274. *C. subarctoum* (Lagerheim) Raciborski							1	1	
275. *C. subcostatum* Nordstedt									1
276. *C. subcrenatum* Hantzsch			1	1	1	1	1		1
277. *C. subcucumis* Schmidle			1						
278. *C. subexcavatum* W. & G. S. West var. *ordinatum* W. & G. S. West			1						
279. *C. subhieronymusii* Whelden							1		
280. *C. subquadratum* Nordstedt					1				
281. *C. subtumidum* Nordstedt			1		1				
282. *C. subundulatum* Wille							1		
283. *C. tetragonum* (Nägeli) Archer			1						
284. *C. tinctum* Ralfs									1
285. *C. triselionatum* Whelden			1						
286. *C. turpinii* de Brébisson			1		1		1		1
and var. *eximium* W. & G. S. West			*1*						
287. *C. undulatum* Corda		1	1		1		1		
and var. *minutum* Wittrock						1			1
288. *C. viride* (Corda) Joshua			1						
289. *Xanthidium antilopaeum* (Bréb.) Kütz.									1
and var. *triquetrum* Lundell		1							
290. *X. cristatum* de Brébisson					1				
291. *Arthrodesmus bifidus* de Brébisson					1				
292. *A. octocornis* Ehrenberg					1				
293. *A. ralfsii* W. West				1			1		
294. *A. triangularis* Lagerheim				1					
295. *Staurastrum acarides* Nordstedt						1			
296. *S. aculeatum* (Ehrenb.) Meneghini					1		1		
297. *S. alternans* de Brébisson							1		
298. *S. anatinum* Cooke & Wills				1					
299. *S. apiculatum* de Brébisson							1		1
300. *S. avicula* de Brébisson					1				
301. *S. baffinensis* Whelden					1				
302. *S. bicorne* Haupfleisch					1				
303. *S. bieneanum* Rabenhorst		1		1	1		1		
and var. *spetsbergensis* Nordstedt						1			
304. *S. brachiatum* Ralfs									1
305. *S. brachycerum* de Brébisson			1		1				
306. *S. brebissonii* Archer									1
307. *S. brevispinum* de Brébisson					1		1		
308. *S. clepsydra* Nordstedt							1		
and var. *sibiricum* (Borge) W. & G. S. West					1	1			
309. *S. compactum* Whelden							1		
310. *S. controversum* de Brébisson									1
311. *S. crenulatum* (Nägeli) Delponte				1		1	1		
312. *S. cristatum* (Nägeli) Archer							1		
313. *S. cuspidatum* de Brébisson							1		
314. *S. cyrtocerum* de Brébisson					1		1		
and var. *compactum* W. & G. S. West			1						
315. *S. dejectum* de Brébisson									1
and var. *inflatum* W. West					1				
316. *S. dickiei* Ralfs					1	1			1
317. *S. dilatatum* Ehrenberg				1		1	1		1

—	1	2	3	4	5	7	8	9	10
318. *S. forficulatum* Lundell var. *longicornis* Schmidle			1						
319. *S. furcatum* (Ehrenb.) de Brébisson					1		1		1
320. *S. furcigerum* de Brébisson					1		1		1
321. *S. glabrum* (Ehrenb.) Ralfs				1			1		
322. *S. gracile* Ralfs					1		1		
323. *S. granulosum* (Ehrenb.) Ralfs					1		1		
324. *S. gratum* Whelden					1	1			
325. *S. hexacerum* (Ehrenb.) Wittrock			1		1				
326. *S. inconspicuum* Nordstedt							1		
327. *S. inconstans* Whelden					1				
328. *S. inflexum* de Brébisson			1	1			1		
329. *S. iotanum* Wolle							1		
330. *S. inornatum* Whelden						1			
331. *S. johnsonii* W. & G. S. West					1				
332. *S. lunatum* Ralfs							1		
and var. *planctonicum* W. & G. S. West							*1*		
333. *S. margaritaceum* (Ehrenb.) Meneghini				1					
334. *S. meriani* Reinsch					1				
335. *S. mucronatum* Ralfs			1		1		1		
and var. *subtriangulare* W. & G. S. West							*1*		
336. *S. muticum* de Brébisson			1	1	1	1	1	1	1
337. *S. natator* W. West					1				
338. *S. neglectum* G. S. West							1		
339. *S. orbiculare* Ralfs							1		
and var. *ralfsii* W. & G. S. West							*1*		
340. *S. pachyrhynchum* Nordstedt			1	1	1		1		
341. *S. polymorphum* de Brébisson				1	1		1		1
342. *S. polytrichum* (Perty) Rabenhorst					1				
343. *S. proboscidium* (Bréb.) Archer			1		1		1	1	
344. *S. punctulatum* de Brébisson			1		1		1		1
and var. *pygmaeum* (Bréb.) W. & G. S. West							*1*		*1*
345. *S. pyramidatum* W. West						1			
346. *S. rhabdophorum* Nordstedt	1								
347. *S. setigerum* Cleve							1		
348. *S. spongiosum* de Brébisson						1			
349. *S. subpygmaeum* W. West							1		1
and var. *subangulatum* W. & G. S. West							*1*		
350. *S. subvarians* Whelden			1						
351. *S. teliferum* Ralfs					1				1
352. *S. tetracerum* Ralfs					1				1
353. *S. tohopekaligense* Wolle var. *trifurcatum* W. & G. S. West					1				
354. *S. varians* Raciborski var. *badense* Schmidle							1		
355. *S. vestitum* Ralfs				1			1		
356. *Sphaerozosma granulatum* Roy & Bissett					1		1		
357. *Spondylosium planum* (Wolle) W. & G. S. West				1	1				
358. *Hyalotheca dissiliens* (Smith) de Brébisson			1	1	1		1		1
359. *Desmidium swartzii* Agardh			1						

——	1	2	3	4	5	7	8	9	10
PERIDINEAE									
360. *Glenodinium dybowskii* (Woloszynska) "Lindemann"					1		1		
361. *G. neglectum* Schilling					1				
362. *Peridinium cinctum* (Müll.) Ehrenberg			1		1		1		1
PHAEOPHYCEAE									
363. *Pylaiella littoralis* (L.) Kjellman		1		1	1	1	1		1
364. *Chordaria flagelliformis* (Müll.) J. G. Agardh				1					
365. *Ralfsia verrucosa* (Areschoug) J. G. Agardh				1	1				
366. *Desmarestia aculeata* Lamouroux		1				1		1	
367. *Dictyosiphon foeniculaceus* Greville						1			
368. *Asperococcus echinatus* Greville				1	1				
369. *Laminaria saccharina* (L.) Lamouroux			1	1		1			
370. *Agarum turneri* Postels & Ruprecht		1	1						
371. *Alaria esculenta* (L.) Greville		1	1			1		1	
372. *Fucus evanescens* Agardh					1				
373. *F. vesiculosus* L.	1		1	1	1	1	1	1	
374. *Ascophyllum nodosum* Le Jolis						1			
RHODOPHYCEAE									
375. *Petrocelis cruenta* J. G. Agardh							1		
376. *Hildbrandtia prototypus* Nardo				1					
377. *Lithothamnion* (?*glaciale* Kjellman)				1					
378. *Delesseria sinuosa* Lamouroux			1						
379. *Polysiphonia fastigiata* Greville				1					
380. *Rhodochorton rothii* Nägeli		1							
381. *Ahnfeltia plicata* (Hudson) Fries		1	1						
382. *Halosaccion ramentaceum* (L.) J. G. Agardh				1					
383. *Rhodymenia palmata* (L.) Greville						1			
Total — Entities	6	47	109	89 +1?	177	63	136	8	112
Total — Species	6	46	106	88 +1?	170	62	126	8	106

2. *Marine Phytoplankton*

—	1	2	3	4	5	9
DIATOMEAE						
1. *Achnanthes hyperborea* Grunow				1		
2. *A. taeniata* Grunow	1	1	1	1		
3. *Actinocyclus alienus* Grunow var. *arcticus* Grunow				1		
4. *Amphiprora hyperborea* (Grun.) Gran				1	1	
5. *Asteromphalus heptactis* (Bréb.) Ralfs				1		
6. *A. robustus* Castracane	1	1	1	1		
7. *Bacteriosira fragilis* (Gran) Gran	1	1		1		1
8. *Biddulphia aurita* (Lyngb.) de Brébisson & Godey	1	1	1	1	1	
and var. *obtusa* (Kütz.) Hustedt		*1*				
9. *Chaetoceros atlanticus* Cleve	1	1	1	1	1	1
10. *C. borealis* Bailey	1	1	1	1	1	1
11. *C. compressus* Lauder	1	1	1	1		1
12. *C. concavicornis* Mangin	1	1	1	1	1	
13. *C. constrictus* Gran						1
14. *C. convolutus* Castracane	1	1	1	1	1	1
15. *C. curvisetus* Cleve				1		
16. *C. debilis* Cleve	1	1	1	1		1
17. *C. decipiens* Cleve	1	1	1	1	1	1
18. *C. densus* Cleve	1	1	1	1	1	
19. *C. diadema* (Ehrenb.) Gran	1	1	1	1	1	1
20. *C. fragilis* Meunier	1		1			1
21. *C. furcellatus* Bailey	1	1	1	1	1	
22. *C. gracilis* Schütt			1			1
23. *C. karianus* Grunow	1	1				
24. *C. laciniosus* Schütt	1	1	1	1	1	1
25. *C. mitra* (Bail.) Cleve			1			
26. *C. pseudocrinitus* Ostenfeld				1		1
27. *C. radicans* Schütt				1		
28. *C. septentrionalis* Østrup	1	1	1	1		1
29. *C. socialis* Lauder	1	1	1	1		1
30. *C. teres* Cleve	1	1	1	1	1	1
31. *C. wighamii* Brightwell	1	1	1	1		
32. *Coscinodiscus centralis* Ehrenb. emend. Hustedt	1	1	1	1	1	
33. *C. curvatulus* Grunow var. *karianus* Grunow	1		1	1	1	
and var. *minor* (Ehrenb.) Grunow		?				
34. *C. excentricus* Ehrenberg						1
35. *C. lacustris* Grunow var. *hyperboreus* Grunow			1			
36. *C. radiatus* Ehrenberg						1
37. *C. stellaris* Roper				1		
38. *Coscinosira polychorda* Gran	1	1		1		1
39. *Cyclotella striata* (Kütz.) Grunow		1				
40. *Dactyliosolen antarcticus* Castracane					1	1
41. *Detonula confervacea* (Cleve) Gran			1	1		
42. *Eucampia zodiacus* Ehrenberg	1	1	1	1		1
43. *Fragilaria cylindrus* Grunow			?	?		
44. *F. islandica* Grunow	1			1		1
45. *F. nana* E. S. Nielsen				1	1	
46. *F. oceanica* Cleve	1	1	1	1	1	1
47. *F. striatula* Lyngbye	1					
48. *Isthmia nervosa* Kützing						1
49. *Leptocylindrus danicus* Cleve	1	1		1		1
50. *L. minimus* Gran						1
51. *Melosira arctica* Dickie	1	1	1	1	1	
52. *M. moniliformis* (Müll.) Agardh						1
53. *M. sulcata* (Ehrenb.) Kützing		1				
54. *Navicula granii* (Jørg.) Gran		1		1		

—	1	2	3	4	5	9
55. *N. pelagica* Cleve	....	....	1	....	....	....
56. *N. septentrionalis* (Grun.) Gran	....	....	....	1	....	....
57. *N. vanhoffenii* Gran	?	....	1	1	....	....
58. *Nitzschia closterium* (Ehrenb.) W. Smith	1	1	1	1	....	1
59. *N. delicatissima* Cleve	....	....	....	1	....	1
60. *N. frigida* Grunow	1	1	1	....	....	....
61. *N. seriata* Cleve	1	1	1	1	1	1
62. *Pleurosigma* sp	....	....	1	1	....	....
63. *Podosira glacialis* (Grun.) Jørgensen	1	1	1	1	....	1
64. *Rhabdonema adriaticum* Kützing	....	....	....	....	....	1
65. *R. arcuatum* (Lyngb.) Kützing	1	....	....	....	....	....
66. *R. minutum* Kützing	....	1	....	....	....	....
67. *Rhizosolenia alata* Brightwell f. *inermis* (Castracane) Hustedt	....	....	....	1	1	1
68. *R. hebetata* Bailey emend. Gran f. *hiemalis* Gran	1	1	1	1	....	....
and f. *semispina* (Hensen) Gran	*1*	*1*	*1*	*1*	1	....
69. *R. styliformis* Brightwell	....	1	1	1	1	1
70. *Streptotheca tamensis* Shrubsole	....	....	....	....	....	1
71. *Thalassiosira bioculata* (Grun.) Ostenfeld	1	1	1	1	1	....
and var. *exigua* Grunow	....	....	....	*1*	....	....
72. *T. decipiens* (Grun.) Jørgensen	....	....	....	1	....	....
73. *T. gravida* Cleve	1	1	1	1	1	1
74. *T. hyalina* (Grun.) Gran	....	1	....	1	....	1
75. *T. nordenskioldii* Cleve	1	1	1	1	....	1
76. *T. rotula* Meunier	....	....	....	....	....	1
77. *T. subtilis* (Ostenf.) Gran	....	....	....	....	....	1
78. *Thalassiothrix longissima* Cleve & Grunow	1	1	1	1	1	....
79. *Triceratium arcticum* Brightwell	1	....	....	....	....	1
and f. *balaenum* (Ehrenb.) Meunier	....	1	....	....	....	*1*
PERIDINEAE						
80. *Ceratium arcticum* (Ehrenb.) Cleve	1	1	1	1	1	1
81. *C. fusus* (Ehrenb.) Dujardin	....	....	....	....	1	....
82. *C. lineatum* (Ehrenb.) Cleve	....	....	....	....	1	....
83. *C. longipes* (Bail.) Gran	....	....	....	1	....	....
84. *Ceratium* sp	....	....	1	....	....	....
85. *Dinophysis acuminata* Claparède & Lachmann	....	....	....	1	....	....
86. *D. acuta* Ehrenberg	....	....	....	....	1	....
87. *D. arctica* Mereschkowsky	....	....	....	1	....	....
88. *D. norwegica* Claparède & Lachmann	1	1	1	1	....	....
89. *Glenodinium danicum* Paulsen	1	1	1	1	....	....
90. *G. lenticulum* (Bergh) Schiller	1	1	1	....	....	....
91. *Gonyaulax catenata* (Levand.) Kofoid	1	1	1	....	....	....
92. *G. scrippsae* Kofoid	1	1	1	....	....	....
93. *G. triacantha* Jørgensen	....	....	1	1	....	....
94. *Gymnodinium lohmanni* Paulsen	....	....	....	1	....	....
95. *Minuscula bipes* (Pauls.) Lebour	....	1	....	1	....	....
96. *Oxytoxum gracile* Gran	....	....	....	1	....	....
97. *Peridinium brevipes* Paulsen	1	1	1	1	....	....
98. *P. cerasus* Paulsen	1	1	1	1	....	....
99. *P. conicoides* Paulsen	1	1	1	1	....	....
100. *P. conicum* (Gran) Ostenfeld & Schmidt	....	1	....	1	....	....
101. *P. curvipes* Ostenfeld	1	1	1	....	....	....
102. *P. depressum* Bailey	1	1	1	1	1	....
103. *P. islandicum* Paulsen	1	1	1	....	....	....
104. *P. laticeps* Grøntved & Seidenfaden	1	1	1	1	....	....
105. *P. leonis* Pavillard	....	....	....	1	....	....
106. *P. monacanthum* Broch	1	1	1	....	....	....
107. *P. oceanicum* Vanhöffen	....	....	....	1	....	....

—	1	2	3	4	5	9
108. *P. ovatum* (Pouchet) Schütt	1	1	....	1	1	....
and f. *arcticum* Grøntved & Seidenfaden	*1*	*1*	1	....	....	....
109. *P. pallidum* Ostenfeld	1	1	1	1	1	....
110. *P. parallelum* Broch	....	....	....	....	1	....
111. *P. pellucidum* (Bergh) Schütt	1	1	1	1	....	....
112. *P. roseum* Paulsen	1	1	1	1	1	....
113. *P. subinerme* Paulsen	1	1	1	1	....	....
114. *P. thorianum* Paulsen	1	1	1	1	....	....
115. *Phalacroma rotundatum* (Clap. & Lachm.) Kofoid & Michener	1	....	1	1	....	....
116. *Pouchetia* sp. or spp	....	....	....	1	....	....
117. *Protoceratium reticulatum* (Clap. & Lachm.) Bütschli	....	1	....	....	....	....
118. *Torodinium robustum* Kofoid & Swezy	....	....	....	1	....	....
FLAGELLATAE AND SILICOFLAGELLATAE						
119. *Dinobryon pellucidum* Levander	1	1	1	....	....	....
120. *Phaeocystis pouchetii* (Hariot) Lagerheim	1	1	....	....	1	....
121. *Distephanus speculus* (Ehrenb.) Haeckel var. *regularis* Lemmermann	1	1	1	1	1	....
and var. *polyactis* (Ehrenb.) Lemmermann	....	*1*	*1*	*1*	....	....
and var. *septenarius* (Ehrenb.) Jørgensen	....	*1*	....	*1*	....	....
Total { Entities	67 +1?	73 +1?	68 +1?	86 +1?	36	43 ....
Total { Species	65 +1?	68 +1?	66 +1?	82 +1?	36	42 ....

3. *Freshwater Diatomeae*

—	1	2	3	4	5	7	8	9
1. *Melosira dendroteres* (Ehrenb.) Ross var. *roeseana* (Rabenh.) Ross	....	....	....	1	....	....	....	....
2. *M. granulata* (Ehrenb.) Ralfs	....	1	....	1	1	....	....	....
3. *M. sulcata* (Ehrenb.) Kützing	....	....	1	1	....	....	....	....
4. *Cyclotella antiqua* W. Smith	1	....	1	....	1	1	1	1
5. *C. stelligera* Cleve & Grunow	....	....	....	....	1	....	....	....
6. *Stephanodiscus astraea* (Ehrenb.) Grunow	....	....	....	....	....	....	1	....
7. *Tabellaria fenestrata* (Lyngb.) Kützing	1	1	1	1	1	1	1	1
8. *T. flocculosa* (Roth) Kützing	1	....	1	1	1	1	1	....
9. *Grammatophora serpentina* Ehrenberg	1	....	....	....	....	....	....	....
10. *Meridion circulare* (Grev.) Agardh	1	....	1	....	1	1	....	....
11. *Diatoma tenue* Agardh var. *pachycephalum* Grunow	1	....	1	1	1	....	....	1
12. *Fragilaria brevistriata* Grunow	....	....	....	....	1	....	....	....
13. *F. construens* (Ehrenb.) Grunow	....	....	....	....	1	....	....	....
14. *F. pinnata* Ehrenberg	....	1	1	....	1	1	....	1
15. *F. vaucheriae* (Kütz.) Boye Petersen var. *capitellata* (Grunow) Ross	1	....	....	....	....	....	....	....
16. *Synedra acus* Kützing var. *mesoleia* (Grunow) Østrup	....	....	....	....	1	....	....	....
17. *S. amphicephala* Kützing	1	....	1	1	1	....	....	1
18. *S. minuscula* Grunow	....	1	1	....	....	....	....	....
19. *S. pulchella* (Ralfs) Kützing	1	1	1	....	....	....	1	....

——	1	2	3	4	5	7	8	9
20. *S. tabulata* (Agardh) Kützing var. *delicatula* (Grunow) Ross							1	
and var. *obtusa* (Arnott) Ross				1			*1*	
21. *S. ulna* (Nitzsch) Ehrenberg var. *amphirhyncus* (Ehrenb.) Grunow						1		
and var. *genuina* Grunow		1	1		1	*1*		1
and var. *recta* (Kütz.) Ross					*1*			
22. *Ceratoneis arcus* (Ehrenb.) Kützing	1		1		1	1		
23. *Eunotia arcus* Ehrenberg			1		1			
24. *E. bigibba* Kützing var. *pumila* Grunow					1			
25. *E. curvata* (Kütz.) Lagerstedt	1		1	1		1	1	1
26. *E. diodon* Ehrenberg	1			1				
27. *E. exigua* (Bréb.) Rabenhorst					1		1	
28. *E. fallax* A. Cleve var. *gracillima* Krasske				1	1		1	
and var. *typica* Ross	1		1		*1*			
29. *E. glacialis* Meister			1					
30. *E. lapponica* Grunow				1				
31. *E. monodon* Ehrenberg							1	
32. *E. naegelii* Migula				1				
33. *E. papilio* (Ehrenb.) Hustedt			1	1				
34. *E. parallela* Ehrenberg					1			
35. *E. pectinalis* (O. F. Müller) Rabenhorst var. *minor* (Kütz.) Rabenhorst			1	1		1	1	
and var. *stricta* (Rabenh.) Rabenhorst			*1*	*1*				
36. *E. perpusilla* Grunow var. *perminuta* (Grunow) Ross				1			1	
37. *E. praerupta* Ehrenberg var. *bidens* (Ehrenb.) Grunow	1			1				
and var. *genuina* Grunow	*1*	1	1	*1*	1	1	1	
38. *E. pseudoparallela* A. Cleve-Euler				1			1	
39. *E. septentrionalis* Østrup				1		1		
40. *E. suecica* A. Cleve				1				
41. *E. tenella* (Grunow) Hustedt			1				1	
42. *E. triodon* Ehrenberg				1			1	
43. *E. valida* Hustedt					1			
44. *E. veneris* (Kütz.) De Toni				1				
45. *Achnanthes flexella* (Bréb.) Brun	1	1	1	1	1			1
46. *A. hyperborea* Grunow								?
47. *A. marginulata* Grunow	1						1	
48. *A. minutissima* Kützing var. *cryptocephala* Grunow		1	1	1	1		1	1
49. *Cocconeis placentula* Ehrenberg		1						
50. *C. scutellum* Ehrenberg		1						
51. *C. septentrionalis* Grunow		1		1				
52. *Navicula amphibola* Cleve	1							
53. *N. avenacea* de Brébisson			1					
54. *N. bacilliformis* Grunow			1		1	1		
55. *N. bacillum* Ehrenberg	1		1		1			1
56. *N. brachysira* de Brébisson				1	1			
57. *N. capitata* Ehrenberg var. *capitata* (Ehrenb.) Ross	1							
and var. *hungarica* (Grunow) Ross	*1*							
58. *N. cincta* (Ehrenb.) Ralfs var. *angusta* (Grunow) Cleve	1					1		
and var. *heufleri* (Grunow) Van Huerck		1						
59. *N. cocconeiformis* Gregory				1				
60. *N. contenta* Grunow var. *parallela* Petersen							1	
and var. *typica* Ross				1				
61. *N. cryptocephala* Kützing	1		1	1				

—	1	2	3	4	5	7	8	9
62. *N. cuspidata* (Kütz.) Kützing var. *ambigua* (Ehrenb.) Cleve	1							
63. *N. dicephala* Ehrenberg				1				
64. *N. falaisiensis* Grunow	?							
65. *N. heufleriana* (Grunow) Cleve	1							
66. *N. lanceolata* (Agardh) Kützing	1					1		
67. *N. maculosa* Donkin				1				
68. *N. minima* Grunow var. *atomoides* (Grunow) Cleve					1			
and var. *typica* Ross	1			1	*1*			
69. *N. minuscula* Grunow								1
70. *N. muralis* Grunow	1		1					
71. *N. mutica* Kützing var. *nivalis* (Ehrenb.) Hustedt	1			1				
72. *N. perpusilla* Grunow	1					1		
73. *N. pupula* Kützing		1	1		1			
74. *N. pusilla* W. Smith				1				
75. *N. pygmaea* Kützing	1							
76. *N. radiosa* Kützing var. *genuina* Grunow	1	1			1	1		
and var. *tenella* (Bréb.) Cleve			1		*1*			
77. *N. ramosissima* (Agardh) Cleve			1					
78. *N. rhyncocephala* Kützing var. *brevis* Grunow		1						
and var. *genuina* Schawo	1							
79. *N. rotaeana* (Rabenh.) Grunow	1			1	1	1	1	
80. *N. salinarum* Grunow		1						
81. *N. sphaerophora* Ehrenberg					1			
82. *N. styriaca* Grunow					1			
83. *N. subtilissima* Cleve							1	
84. *N. tuscula* Ehrenberg		1	1		1			
85. *N. variabilis* Ross var. *capitata* Ross		1			1			
and var. *gomphonemacea* (Grunow) Ross					*1*		1	1
86. *N. viridula* (Kütz.) Ehrenberg var. *genuina* Mayer					1	1		
and var. *slesvicensis* (Grunow) Van Huerck	1					*1*		
87. *N. vulpina* Kützing	1	1	1		1			1
88. *N. zellensis* Grunow var. *linearis* (Østrup) Ross			1	1	1		1	
and var. *typica* Ross					*1*			
89. *Pinnularia abaujensis* (Pantocsek) Ross	1		1					
90. *P. appendiculata* (Agardh) Cleve				1				
91. *P. biceps* Gregory f. *biceps* (Cleve) Ross			1	1			1	
and f. *petersenii* Ross			*1*		1			
and f. *stauroneiformis* (Cleve) Ross					*1*			
92. *P. borealis* Ehrenberg	1			1			1	
93. *P. brandelii* Cleve			1					
94. *P. brebissonii* (Kütz.) Rabenhorst var. *diminuta* (Grunow) Cleve	1							
and var. *genuina* O. Müller	*1*	1		1				
95. *P. brevistriata* (Grunow) Mills				1				
96. *P. cleveana* Ross			1		1	1		
97. *P. cuneata* (Østrup) A. Cleve-Euler						1		
98. *P. divergens* W. Smith var. *elliptica* (Grunow) Cleve				1				
and var. *genuina* Mayer	1		1	*1*			1	
and var. *sublinearis* Cleve				*1*	1			
99. *P. divergentissima* (Grunow) Cleve var. *hustedtiana* Ross				1		1	1	
and var. *typica* Ross	1							

—	1	2	3	4	5	7	8	9
100. *P. fasciata* (Lagerstedt) Mereschowsky var. *inconstantissima* (Grunow) Ross				1				1
and var. *inflata* (Pantocsek) Ross					1			
101. *P. globiceps* Gregory var. *krookii* (Grunow) Cleve				1	1	1	1	
and var. *typica* Ross	1							
102. *P. gracillima* Gregory				1				
103. *P. hudsonensis* Ross	1				1		1	
104. *P. intermedia* (Lagerstedt) Cleve	1							
105. *P. lata* (Bréb.) W. Smith var. *genuina* Mayer				1				
and var. *minor* (Grunow) Cleve						1		
106. *P. leptosoma* (Grunow) Cleve var. *typica* Ross	1							
and var. *undulata* Østrup			1					
107. *P. major* (Kütz.) W. Smith var. *subacuta* (Ehrenb.) Cleve					1			
108. *P. mesogongyla* Ehrenberg				1			1	
109. *P. mesolepta* (Ehrenb.) W. Smith var. *genuina* (Grunow) Meister	1							
and var. *stauroneiformis* (Grunow) Cleve			1		1			
110. *P. microstauron* (Ehrenb.) Cleve	1		1	1		1	1	
111. *P. parvula* (Ralfs) A. Cleve-Euler				1				
112. *P. pulchra* Østrup						1		
113. *P. spitsbergensis* Cleve		1	1	1	1	1	1	
114. *P. streptoraphe* Cleve				1			1	
115. *P. subcapitata* Gregory var. *stauroneiformis* (Van Huerck) Mayer						1		
116. *P. sublinearis* (Grunow) Cleve							1	
117. *P. subsolea* A. Cleve-Euler				1				
118. *P. viridis* (Nitzsch) W. Smith var. *clevei* Meister						1		
and var. *commutata* (Grunow) Cleve				1	1	*1*		
and var. *intermedia* Cleve		1			*1*			
119. *Caloneis bacillaris* (Gregory) Cleve			1					
120. *C. islandica* Østrup					1			
121. *C. obtusa* (W. Smith) Cleve					1			
122. *C. silicula* (Ehrenb.) Cleve var. *alpina* Cleve	1	1	1		1	1		1
and var. *genuina* Cleve		*1*	*1*					
and var. *subundulata* (Grunow) Ross		*1*	*1*					
123. *Neidium affine* (Ehrenb.) Pfitzer var. *capitatum* Mölder		1	1		1	1		
and var. *undulatum* (Grunow) Cleve						*1*		
124. *N. amphigomphus* (Ehrenb.) Pfitzer			1					
125. *N. bisulcatum* (Lagerstedt) Cleve			1	1	1		1	
126. *N. incurvum* (Gregory) Østrup					1			
127. *N. iridis* (Ehrenb.) Cleve var. *ampliatum* (Ehrenb.) Cleve				1	1		1	
and var. *majus* (Grunow) Ross	1			*1*				1
128. *N. kozlowi* Mereschowsky var. *parvum* Mereschowsky			1					
and var. *typicum* Ross			*1*					
129. *N. longiceps* (Gregory) Ross	1					1		
130. *Stauroneis anceps* Ehrenberg var. *amphicephala* (Kütz.) Cleve	1	1	1	1	1	1	1	
and var. *hyalina* M. Peragallo & Brun				*1*				
and var. *linearis* (Ehrenb.) Grunow	*1*			*1*				
and var. *siberica* Grunow					*1*			
131. *S. obtusa* Lagerstedt							1	
132. *S. perpusilla* Grunow var. *obtusiuscula* Grunow			1		1		1	

—	1	2	3	4	5	7	8	9
133. *S. phoenicenteron* (Nitzsch) Kützing var. *amphilepta* (Ehrenb.) Cleve		1	1		1	1	1	
and var. *genuina* Cleve			*1*		*1*			
134. *S. smithii* Grunow						1		
135. *Diploneis oblongella* (Naegeli) Cleve var. *oblongella* (Naegeli) Ross			1			1		1
and var. *ovalis* (Hilse) Ross	1		*1*		1	*1*	1	
136. *D. pseudovalis* Hustedt					1			
137. *Frustulia rhomboides* (Ehrenb.) De Toni var. *crassinervia* (Bréb.) Ross				1	1	1	1	
138. *F. vulgaris* (Thwaites) De Toni						1		
139. *Diatomella balfouriana* Greville	1	1	1		1	1		
140. *Gomphonema angustatum* (Kütz.) Rabenhorst var. *aequale* (Gregory) Cleve			1					
and var. *productum* Grunow	1					1		
and var. *undulatum* Grunow			*1*		1			
141. *G. intricatum* Kützing			1					
142. *G. micropus* Kützing					1	1	1	
143. *G. mustela* Ehrenberg			1		1	1	1	
144. *G. parvulum* Kützing	1					1		
145. *G. subclavatum* (Grun.) Grunow								1
146. *G. truncatum* Ehrenberg			1					
147. *Cymbella aequalis* W. Smith		1	1	1	1		1	
148. *C. amphicephala* Naegeli	1				1			
149. *C. angustata* (W. Smith) Cleve var. *hybrida* (Grunow) Ross	1	1	1		1	1	1	1
and var. *linearis* (Fontell) Ross	*1*			1	*1*	*1*		*1*
150. *C. austriaca* Grunow					1			
151. *C. botellus* (Lagerstedt) A. Schmidt	1	1	1		1	1	1	1
152. *C. cesatii* Grunow			1		1			1
153. *C. cistula* (Hemprich & Ehrenb.) Kirchner var. *arctica* (Lagerstedt) Cleve			1					1
and var. *eucistula* Mayer			*1*		1			*1*
and var. *maculata* (Kütz.) Cleve	1	1			*1*	1		*1*
154. *C. cuspidata* Kützing	1	1	1	1		1		
155. *C. gastroides* (Kütz.) Kützing			1			1		
156. *C. heteropleura* (Ehrenb.) Kützing var. *minor* Cleve	1	1	1	1	1		1	
and var. *typica* Ross				*1*				
157. *C. microcephala* Grunow				1			1	1
158. *C. rabenhorstii* Ross				1				
159. *C. rupicola* Grunow	1							
160. *C. scotica* W. Smith var. *incerta* (Grunow) Ross	1		1		1	1	1	1
and var. *naviculacea* (Grunow) Ross				1	*1*	*1*		
161. *C. stauroneiformis* Lagerstedt	1		1		1	1	1	
162. *C. subaequalis* Grunow var. *oblonga* (Fontell) Ross		1	1		1	1		1
163. *C. tumidula* Grunow	1	1	1		1			
164. *C. turgida* Gregory	1	1	1		1	1		
165. *C. turgidula* Grunow					1			1
166. *C. ventricosa* Agardh var. *genuina* Mayer	1		1	1	1	1		1
and var. *semicircularis* (Lagerstedt) Ross	*1*		*1*	*1*		*1*		
167. *Amphora coffeaeformis* (Agardh) Kützing			1					
168. *A. dubiosa* Østrup		?						
169. *A. ovalis* (Kütz.) Kützing var. *affinis* (Kütz.) Van Huerck	1	1	1					
and var. *pediculus* (Kütz.) Van Huerck	*1*							1
and var. *typica* (Cleve) Meister	*1*		*1*		1			
170. *A. triundulata* Ross	1							

——	1	2	3	4	5	7	8	9
171. *Denticula tenuis* Kützing var. *frigida* (Kütz.) Grunow	1	....	....	....	....	....	....	....
and var. *intermedia* Grunow	*1*	1	1	....	1	1	1	1
and var. *mesolepta* Grunow	....	....	....	....	....	*1*	....	....
172. *Epithemia argus* (Ehrenb.) Kützing	....	....	....	1	1	....	....	....
173. *E. cistula* (Ehrenb.) Ralfs	....	....	....	....	1	....	....	....
174. *Rhopalodia gibba* (Ehrenb.) O. Müller	....	....	....	....	1	....	....	....
175. *R. parallela* (Grunow) O. Müller	....	....	....	1	....	....	....	....
176. *Nitzschia acula* Hantzsch	....	....	1	....	....	....	....	....
177. *N. amphibia* Grunow	1	1	1	....	1	1	1	1
178. *N. amphioxys* (Ehrenb.) W. Smith	1	....	....	1	1	1	....	....
179. *N. angustata* (W. Smith) Grunow	....	1	....	....	1	....	....	1
180. *N. apiculata* (Gregory) Grunow	....	....	....	....	1	....	....	....
181. *N. clausii* Hantzsch	1	....	....	....	....	....	....	....
182. *N. commutata* Grunow	1	1	....	....	....	....	....	....
183. *N. denticula* Grunow	....	....	1	....	1	1	....	....
184. *N. dubia* W. Smith	....	....	1	....	....	....	....	....
185. *N. frustulum* (Kütz.) Grunow	1	1	1	1	1	1	1	1
186. *N. gracilis* Hantzsch	....	....	....	....	1	....	....	....
187. *N. palea* (Kütz.) W. Smith	1	....	1	1	1	1	....	1
188. *N. sinuata* (W. Smith) Grunow	....	1	1	....	1	....	....	....
189. *N. subtilis* Grunow var. *genuina* Grunow	....	....	1	....	....	....	....	....
and var. *paleacea* Grunow	....	1	....	....	1	....	....	....
190. *N. vitrea* Norman	....	....	1	....	....	....	....	....
191. *Cymatopleura librilis* (Ehrenb.) Pantocsek	1	....	....	....	....	....	....	....
192. *Surirella ovata* Kützing	1	....	....	....	....	....	....	....
Total......... Entities	85 +1?	47 +1?	94	80	107	67	55	36 +1?
Species	76 +1?	45 +1?	83	71	94	58	54	33 +1?

4. *Fungi*

——	1	2	3	4	5	7	8	9	10
PHYCOMYCETES									
1. *Micromyces minimus* Linder	....	....	....	....	1	....	....	....	....
2. *M. echinocystis* Linder	....	....	....	....	....	....	1	....	....
3. *M. wheldenii* Linder	....	....	....	....	....	....	1	....	....
4. *Olpidium endogenum* (A. Br.) Schröter	....	....	....	....	....	....	....	....	1
5. *O. utriculiforme* Scherffel	....	....	....	....	1	....	....	....	1
6. *Phlyctochytrium magnum* Linder	....	....	....	....	....	....	1	....	....
7. *?Rhizophidium digitatum* Scherffel	....	....	....	....	....	....	?	....	....
8. *Ancylistes closterii* Pfitzer	....	....	....	....	....	....	....	....	1
9. *Lagenidium rabenhorstii* Zopf	....	....	....	....	....	....	1	....	....
10. *Aphanomyces norvegicus* Wille	....	....	1	....	....	....	....	....	....
11. *Peronospora cochleariae* Gäumann	....	....	....	....	....	....	1	....	....
12. *P. parasitica* (Pers.) Tulasne *s.l.*	....	....	....	....	....	....	....	1	....
13. *P. septentrionalis* Gäumann	....	....	....	....	....	1	....	....	....
14. *P. tornensis* Gäumann	....	....	....	....	1	....	....	....	....

——	1	2	3	4	5	7	8	9	10
ASCOMYCETES									
15. *Sphaerotheca humuli* (DC.) Burrill	...	...	...	...	...	...	...	...	1
16. *Pyrenophora androsaces* (Fuckel) Saccardo	...	...	...	...	1	...	...	...	...
17. *P. comata* (Awd. & Niessl.) Saccardo	...	...	1	...	...	...	...	...	...
18. *Claviceps purpurea* (Fr.) Tulasne *s.l.*	...	...	1	...	...	...	...	1	1
19. *Mycosphaerella lineolata* (Desm.) Schröter	...	...	1	...	...	...	...	...	...
20. *M. tassiana* (De Not.) Johanson	...	...	1	...	...	...	...	...	...
21. *M. salicicola* (Fr.) Lind	...	...	...	...	...	...	1	...	...
22. *Stigmatea ranunculi* Fries	...	...	...	...	1	...	...	...	...
23. *Venturia chlorospora* (Ces.) Karsten	...	...	...	...	...	...	1	...	...
24. *V. ditricha* (Fr.) Karsten	...	...	...	...	1	...	...	...	...
25. *Lophodermina culmigena* (Fr.) v. Höhnel	...	...	...	...	...	...	1	...	...
26. *Asterella chamaenerii* Rostrup	...	...	1	...	...	...	...	...	...
27. *Rhytisma salicinum* (Pers.) Fries	...	1	1	1	1	1	...	...	1
28. *Cudoniella borealis* Linder	...	...	...	...	1	...	...	...	...
29. *C. muscorum* Linder	...	...	...	...	...	1	...	...	...
30. *Pseudopeziza drabae* (Nannf.) Nannf.	...	...	...	...	1	...	...	1	...
31. *Rutstroemia poluninii* Linder	...	...	...	...	...	...	1	...	...
32. *Humarina leucoloma* (Hedw.) Seaver	...	...	...	1	...	...	...	...	...
33. *Paxina hispida* (Schaeff.) Seaver	...	1	...	...	...	...	...	...	...
34. *Sphaerospora trechispora* (Berk. & Broome) Saccardo	...	...	1	...	1	...	...	...	...
FUNGI IMPERFECTI									
35. *Bostrychonema alpestre* Cesati	...	...	...	...	...	1	1	...	...
36. *Cladosporium bruhnei* Linder	...	...	...	...	...	...	1	...	...
37. *Diplodina pedicularidis* (Fuckel) Lind	...	...	...	...	1	...	...	...	...
38. *Pestalotia truncata* Léveillé	...	...	...	...	1	...	...	...	...
39. *Rhabdospora oxytropidis* Sydow	...	...	...	...	...	...	1	...	...
BASIDIOMYCETES									
40. *Chrysomyxa empetri* (Pers.) Schröter	...	...	...	...	...	...	1	...	...
41. *C. pyrolae* (DC.) Rostrup	...	...	...	...	1	...	...	...	...
42. *Melampsora arctica* Rostrup	...	...	1	...	...	...	1	...	...
43. *M. bigelowii* Thümen	1	1	1	...	1	...	1	...	...
44. *M. vernalis* Niessl	...	...	...	...	...	...	1	...	...
45. *Puccinia bistortae* (Str.) De Candolle	...	...	...	...	1	1	1	...	...
46. *P. drabae* Rudolphi	...	...	...	...	1	...	1	...	1
47. *P. eutremae* Liro	...	...	...	...	1	...	1	...	...
48. *P. ranunculi* Blytt	...	...	...	...	1	...	1	...	...
49. *P. ustalis* Berkeley var. *pulsatillae* (Kalchbr.) Linder	...	...	...	...	...	...	...	1	1
50. *P. variabilis* Greville	...	...	...	...	...	...	...	...	1
51. *Uromyces lapponicus* Lagerheim	...	...	...	...	...	...	1	...	...
52. *Cintractia caricis* (Pers.) Magnus	...	...	1	1	1	1	1	1	1
53. *C. luzulae* (Sacc.) Clinton	...	...	...	1	...	...	...	...	...
54. *Schizonella melanogramma* (DC.) Schröter	...	...	...	...	...	...	1	...	...
55. *Ustilago inflorescentiae* (Trel.) Maire	...	...	...	...	1	1	1	...	...

—	1	2	3	4	5	7	8	9	10
56. *U. vinosa* (Berk.) Tulasne			1		1	1			
57. *Exobasidium angustisporum* Linder							1		1
58. *E. vaccinii* (Fuckel) Woronin var. *myrtilli* (Fuckel) Juel			1	1	1		1		1
59. *E. vaccinii-uliginosi* Boudier				1	1		1		1
60. *Thelephora terrestris* Ehrh		1							
61. *Cantharellus ?brownii* Berkeley & Broome				?					
62. *Clitocybe fritilliformis* (Lasch) Saccardo					1				
63. *C. laccata* (Scop.) Quélet var *rosella.* (Batsch) Lange							1		
64. *C. metachroa* Fries		1							
65. *C. rivulosa* (Pers.) Quélet			1						
66. *Cortinarius allutus* Fries		1							
67. *C. fasciatus* Fr. (*sensu* Bresadola)						1			
68. *C. incisus* (Pers.) Fries			1						
69. *Dictyolus muscigenus* (Bull.) Quélet			1						
70. *Hygrophorus miniatus* Fries						1			
71. *Omphalia griseo-pallida* Desmazières							1		
72. *O. umbellifera* (L.) Fries			1	1		1	1		
73. *Russula fragilis* (Pers.) Fries					1				
74. *R. ochroleuca* (Pers.) Fries					1				
75. *Bovista plumbea* Persoon							1		
76. *Calvatia cretacea* (Berk.) Lloyd			1			1	1		
77. *C. fragilis* (Vitt.) Morgan			1		1				
78. *Lycoperdon furfuraceum* (Schaeff.) Saccardo			1						
79. *L. polymorphum* Vittadini							1		
Total: Entities	1	6	20	7 +1?	27	12	33 +1?	5	13
Total: Species	1	6	20	7 +1?	27	12	33 +1?	5	13

5. *Lichenes*

—	1	2	3	4	5	6	7	8	9	10
1. *Verrucaria* cf. *devergens* Nyl		1							?	
2. *V. maura* Wahlenb. var. *striatula* Hoffm	?									
3. *V. obsoleta* Lynge									1	
4. *V. phaeothelena* Th. Fr	1									
5. *Polyblastia hyperborea* Th. Fr					1		1		1	
6. *P. bryophila* Lönnr	1									
7. *P. intercedens* (Nyl.) Lönnr	?								?	
8. *P. sommerfeltii* Lynge									1	
9. *Staurothele* sp									1	
10. *Microglaena sordidula* Th. Fr	1									
11. *Dermatocarpon polyphyllum* (Wulf.) Dalla Torre & Sarnth		?								

——	1	2	3	4	5	6	7	8	9	10
12. *Microthelia melanostigma* Th. Fr.	1									
13. *Sphaerophorus fragilis* (L.) Pers.				1	1	1	1	1	1	1
14. *S. globosus* (Huds.) Vain.	1	1	1	1	1		1	1	1	1
15. *Crocynia neglecta* (Nyl.) Hue				1						
16. *Diploschistes scruposus* (L.) Norm.		1								
17. *Ionaspis epulotica* (Ach.) Th. Fr.									1	
18. *Gyalecta peziza* (Mont.) Anzi	1									
19. *Collema arcticum* Lynge					1					
20. *C. furvum* (Ach.) DC		1								
21. *C. pulposum* (Bernh.) Ach	1									
22. *Leptogium schraderi* Bernh	1									
23. *L. tenuissimum* (Dicks.) Fr.	1									
24. *Placynthium asperellum* (Ach.) Trev	1	1	1						1	
25. *Psoroma hypnorum* (Dicks.) Hoffm.			1	1	1		1			
26. *Lobaria linita* (Ach.) Rabenh										1
27. *Sticta arctica* Degel			1							
28. *Solorina crocea* (L.) Ach	1	1		1	1		1	1		
29. *S. saccata* (L.) Ach		?		?					1	
30. *S. bispora* Nyl									1	
31. *Nephroma arcticum* (L.) Torss				1			1			
32. *Peltigera aphthosa* (L.) Willd	?	1	?	1	1	?		1	1	?
33. *P. leucophlebia* (Nyl.) Gyeln		1		1	1				1	1
34. *P. canina* (L.) Willd	1	1		1				1	1	
35. *P. rufescens* (Sm.) Hoffm								1		
36. *P. erumpens* (Tayl.) Vain				1						
37. *P. scabrosa* Th. Fr	1	1		1				1		
38. *P. malacea* (Ach.) E. Fr		1							1	
39. *P. scutata* (Dicks.) Duby				1						
40. *P. venosa* (L.) Hoffm				1					1	
41. *Lecidea atrobrunnea* (Ram.) Schaer		1	1					1		
42. *L. confluens* (Wigg.) Ach				1		1				
43. *L. speirea* Ach					1		1		1	
44. *Lecidea* cf. *soredizodes* (Nyl.) Vain			?							
45. *L. tesselata* Flk	1	1	1	1			1	1		
46. *L. lapicida* Ach		1							1	
and f. *ecrustacea* (Bausch) Anzi		*1*	1		1		1		*1*	
and f. *declinans* Nyl		*1*								
and f. *ochracea* (Nyl.) Vain								1		
47. *L. pantherina* (Ach.) Th. Fr									?	
and var. *acharina* Vain			1				1			
48. *L. macrocarpa* (DC.) Th. Fr. var. *platycarpa* (Ach.) Th. Fr				1						
and var. *superba* (Kbr.) Th. Fr							1			
49. *L. melinodes* (Kbr.) Magn				1						
50. *L. flavocaerulescens* (Hornem.) Ach				1	1					
51. *L. dicksonii* (Gmel.) Ach	1		1		1					
52. *L. obnubila* Th. Fr. & Hellb				1						
53. *L. lulensis* (Hellb.) Th. Fr			1			1				
54. *L. wulfenii* (Hepp.) Arn	1	1			1	1			1	
55. *L. armeniaca* (DC.) Fr							1			
56. *Lecidea* cf. *arctogena* Th. Fr								1		
57. *L. elata* Schaer	1	1	1							
58. *L. ramulosa* Th. Fr	1						1			
59. *L. ementiens* Nyl			1							
60. *Lecidea* cf. *helvola* (Kbr.) Th. Fr. f. *minor* Nyl								?		

——	1	2	3	4	5	6	7	8	9	10
61. *L. aenea* Duf.	1									
and var. *canadensis* Lynge			1							
62. *L. albosuffusa* Th. Fr.									1	
63. *L. auriculata* Th. Fr. var. *diducens* (Nyl.) Th. Fr.	1									
64. *L. berengeriana* (Mass.) Th. Fr.									1	
65. *L. brachyspora* Th. Fr.	1									
66. *L. coarctata* (Sm.) Nyl.				1						
67. *L. crassipes* (Th. Fr.) Nyl.	1									
68. *L. decipiens* (Ehrh.) Ach.	1									
69. *L. despecta* Th. Fr.	1									
70. *L. emergens* Flot.									1	
71. *L. globifera* Ach.		1								
72. *L. goniophila* Flk. var. *granulosa* (Flot.) Vain.	1								1	
and f. *spathea* Vain.									*1*	
73. *L. granulosa* (Ehrh.) Schaer.				?						
74. *L. impavida* Th. Fr.						1				
75. *L. leucophaea* (Flk.) Th. Fr. f. *griseoatra* (Flot.) Th. Fr.	1									
76. *L. lithophila* (Ach.) Th. Fr.									?	
77. *L. paupercula* Th. Fr. var. *acrogena* Th. Fr.	1									
78. *L. pungens* (Kbr.) Nyl.			1							
79. *L. rubiformis* Wahlenb.	1									
80. *L. scrobiculata* Th. Fr.	1									
81. *L. tornoensis* Nyl.	1									
82. *L. ultima* Th. Fr.	1									
83. *L. vernalis* (L.) Ach.									?	
84. *L. vorticosa* (Flk.) Kbr.	1									
85. *Mycoblastus sanguinarius* (L.) Norm.				1						
86. *Bacidia alpina* (Schaer.) Vain.							1			
87. *B. sabuletorum* (Flk.) Lettau	1									
88. *B. verecundula* (Th. Fr.) Magn.	1									
89. *Toninia lobulata* (Sommerf.) Lynge	1									
90. *T. caeruleonigricans* (Lightf.) Th. Fr.		1								
91. *T. squalida* (Schleich.) Mass.				1						
92. *Lopadium muscicolum* (Sommerf.) Kbr.			1	1						
93. *L. fuscoluteum* (Hoffm.) Mudd.						1				
94. *Rhizocarpon chionophilum* Th. Fr.	1	?	1	1		1		1		
95. *R. copelandii* (Kbr.) Th. Fr.	1		1			1				
96. *R. badioatrum* (Flk.) Th. Fr.				1	1		1			
97. *R. jemtlandicum* Malme			1	1	1			1		
98. *R. rittokense* (Hellb.) Th. Fr.				1						
99. *R. geographicum* (L.) DC.	1	1	1	1	1	1		1	1	1
100. *R. disporum* (Naeg.) Müll. Arg.	1	1	1		1		1		1	
101. *R. eupetraeum* (Nyl.) Arn.					1					1
102. *R. grande* (Flk.) Arn.	1					1				
103. *R. petraeum* (Wulf. ?) Mass.		?							1	
104. *Baeomyces roseus* Pers.				1						
105. *Cladonia alpestris* (L.) Rabenh.				1	1		1			
106. *C. rangiferina* (L.) Web.	1	1	1	1	1		1	1		
107. *C. sylvatica* (L.) Hoffm.				1	?		1			
108. *C. mitis* Sandst.			1	1	1		1	1	1	1
109. *C. coccifera* (L.) Willd. or vars.		1	1	1	1			1		
110. *C. deformis* (L.) Hoffm.		1	1	1	1				1	
111. *C. bellidiflora* (Ach.) Schaer.				1	1		1			

—	1	2	3	4	5	6	7	8	9	10
112. *C. amaurocraea* (Flk.) Schaer	....	....	1	1	....	....	1	1	....	....
113. *C. uncialis* (L.) Web	1	1	1	1	1	1	1	1	1	1
114. *C. squamosa* (Scop.) Hoffm	....	....	....	....	1	....	....	....	....	....
115. *C. alpicola* (Flot.) Vain	....	....	....	1	1	....	....	....	....	....
116. *C. elongata* (Jacq.) Hoffm	1	1	1	1	1	....	1	....	1	....
117. *C. cornuta* (L.) Schaer	....	....	....	1	....	....	1	....	....	....
118. *C. lepidota* Nyl	....	1	....	1	1	....	1	1	1	....
119. *C. macrophyllodes* Nyl	....	....	....	....	1	....	....	....	....	....
120. *C. pyxidata* (L.) Fr. or vars	1	1	1	1	1	1	1	1	1	1
121. *C. cyanipes* (Sommerf.) Vain	....	....	....	1	1	....	....	....	....	....
122. *C. scabriuscula* (Del.) Sandst	....	....	1	....	....	....	....	....	....	....
123. *C. crispata* (Ach.) Flot	....	....	....	1	....	....	....	....	....	....
124. *C. decorticata* (Flk.) Spreng	....	....	....	....	....	....	?	....	....	....
125. *C. digitata* (L.) Schaer	....	....	....	?	....	....	....	....	....	....
126. *C. fimbriata* (L.) Fr	....	....	....	1	....	....	....	....	....	....
127. *C. furcata* (Huds.) Schrad	?	1	....	....	....	....	....	....	....	....
128. *C. gracilis* (L.) Willd	....	....	....	1	....	....	....	....	1	....
129. *Stereocaulon alpinum* Laur	1	1	1	1	1	....	1	1	1	1
130. *S. rivulorum* Magn	1	....	....	1	....	....	....	....	....	....
131. *S. paschale* (L.) Ach	?	?	....	1	1	?	....	....	?	....
132. *S. denudatum* Flk	?	....	....	1	1	....	....	....	?	....
133. *S. arcticum* Lynge	1	....	....	....	1	....	1	1	....	....
134. *S. botryosum* Ach	1	1	....	....	....	1	....	....	....	....
135. *S. coralloides* Fr	....	....	....	....	....	....	1	1	....	....
136. *S. tomentosum* Fr	....	....	....	1	....	....	....	....	....	....
137. *Omphalodiscus virginis* (Schaer.) Schol	?	?	1	?	....	....	1	?	....	....
138. *Gyrophora proboscidea* (L.) Ach	1	1	1	1	1	....	....	1	1	1
139. *G. hyperborea* (Hoffm.) Ach	1	1	1	1	1	1	1	1	1	1
140. *G. arctica* Ach	1	1	....	1	....	....	....	1	....	....
141. *G. torrefacta* (Lightf.) Cromb	1	....	1	1	1	1	1	....	....	....
142. *G. vellea* (L.) Ach	1	1	....	1	....	?	....	1	1	....
143. *G. cylindrica* (L.) Ach. or vars	1	....	....	1	1	1	1	....	1	1
144. *G. deusta* (L.) Ach	....	....	....	....	....	?	....	....	....	....
145. *G. rigida* DR	....	....	....	1	....	?	....	....	....	....
146. *Umbilicaria lyngei* Schol	1	....	1	....	1	....	....	....	?	1
147. *U. pennsylvanica* Hoffm	....	....	....	1	....	....	....	....	....	....
148. *Sporastatia cinerea* (Schaer.) Kbr	....	....	....	....	1	1	1	....	....	....
149. *S. testudinea* (Ach.) Mass	1	1	1	1	....	1	....	....	1	....
150. *Sarcogyne simplex* (Dav.) Nyl	1	....	....	....	....	....	....	....	....	....
151. *Acarospora molybdina* (Wahlenb.) Trev	....	....	1	....	....	....	....	....	....	....
152. *A. sinopica* (Wahlenb.) Kbr	....	....	....	....	1	....	....	....	....	....
153. *A. chlorophana* (Wahlenb.) Mass	1	1	....	....	....	....	....	....	....	....
154. *Pertusaria oculata* (Dicks.) Th. Fr	....	....	....	1	1	1	....	....	1	....
155. *P. panyrga* (Ach.) Mass	....	....	....	....	1	....	....	....	1	....
156. *P. dactylina* (Ach.) Nyl	....	....	1	1	1	....	....	1	1	....
157. *P. coriacea* Th. Fr	1	1	1	1	1	....	1	....	1	....
158. *P. pertusa* (L.) Tuck	....	....	....	....	1	....	....	....	....	....
159. *P. pruinifera* Erichsen	....	1	....	....	....	....	....	....	....	....
160. *P. glomerata* (Ach.) Schaer	....	....	....	....	?	....	....	....	....	....
161. *Lecanora atra* (Huds.) Ach	....	1	....	1	....	....	....	1	....	....
162. *L. campestris* Schaer	?	1	....	....	....	....	....	?	....	....
163. *L. epibryon* Ach	1	1	1	?	1	1	1	....	1	1
164. *L. bicincta* Ram	....	....	....	....	1	....	....	....	....	1
165. *L. dispersa* (Pers.) Röhl	1	1	....	....	....	....	....	....	....	....
166. *L. polytropa* (Ehrh.) Rabenh. or vars	1	1	1	1	1	1	1	1	....	....
167. *L. intricata* (Schrad.) Ach	....	....	....	....	....	....	1	1	....	....
168. *L. badia* (Hoffm.) Ach. or var	....	1	....	....	....	....	....	1	....	....

—	1	2	3	4	5	6	7	8	9	10
169. *L. verrucosa* Ach.	1	1							1	
170. *L. lesleyana* (Darb.) Paulson	1	1								
171. *L. canadensis* Lynge & Magn			1							
172. *L. alpina* Sommerf							1			
173. *L. myrini* (Fr.) Nyl					?					
174. *L. albescens* (Hoffm.) Flk	1									
175. *L. calcarea* (L.) Sommerf	?									
176. *L. contractula* Nyl. var. *feracissima* Th. Fr										1
177. *L. flavida* Hepp	1									
178. *L. frustulosa* (Dicks.) Ach		1			1					
179. *L. gelida* (L.) Ach		1								
180. *L. gibbosa* (Ach.) Nyl., *s.l*	?								?	
181. *L. ?mastoidea* Lynge									?	
182. *L. hageni* Ach	1									
183. *L. melanophthalma* Ram	1			1					1	
184. *L. perradiata* Nyl	?					1				
185. *L. poluninii* Lynge									1	
186. *L. rubina* (Vill.) Ach				1						
187. *L. rupicola* (L.) Zahlbr									1	
188. *Ochrolechia frigida* (Sw.) Lynge	1	1	1	1	1	1	1	1	1	1
189. *O. inaequatula* (Nyl.) Zahlbr			1					1		
190. *O. upsaliensis* (L.) Mass	?	1	1	?	1				1	
191. *O. parella* (L.) Mass					1					
192. *Haematomma ventosum* (L.) Mass. or var	?	1	1	1	1	1	1	1	1	1
193. *Candelariella epixantha* (Ach.) Sandst	1	1			1					
194. *C. placodizans* (Nyl.) Magn	1		1		1	1	1			
195. *C. vitellina* (Ehrh.) Müll. Arg	1	1		1	1	1			1	
196. *C. crenulata* (Wahlenb.) Zahlbr	?			?						
197. *Parmeliopsis ambigua* (Wulf.) Nyl.			1							
198. *Parmelia physodes* (L.) Ach	1		1	1				1	1	
199. *P. subobscura* Vain	1	?				1			1	
200. *P. austerodes* Nyl									1	
201. *P. intestiniformis* (Vill.) Ach	?		1	?						
202. *P. infumata* Nyl	?								1	
203. *P. alpicola* Th. Fr				1	1	1	1	1		1
204. *P. granulosa* Lynge		1								
205. *P. pubescens* (L.) Vain	?	1	1	1		1		1		
206. *P. minuscula* Nyl		1				1				
207. *P. centrifuga* (L.) Ach				1	1			1		1
208. *P. incurva* (Pers.) Th. Fr		1		1						
209. *P. separata* Th. Fr	1		1	1		1			1	
210. *P. saxatilis* (L.) Ach	1	1	1	1	1	1	1		1	1
211. *P. sulcata* Tayl			1	1	1				1	
212. *P. omphalodes* (L.) Ach	1	1	1	1		1			1	
213. *P. conspersa* (Ehrh.) Ach	?	?		?		?				
214. *P. prolixa* (Ach.) Röhl	1									
215. *P. stygia* (L.) Ach	?	?		?		?				
216. *Cetraria islandica* (L.) Ach	1	1	1	1	1	1		1	1	
217. *C. crispa* (Ach.) Nyl	1	1	1	1				1		
218. *C. delisei* (Bory) Th. Fr	1	1	1	1	1	1		1	1	
219. *C. nivalis* (L.) Ach	1	1	1	1	1	1	1	1	1	1
220. *C. cucullata* (Bell.) Ach	1	1	1	1	1	1	1	1	1	1
221. *C. tilesii* Ach		1	1			1			1	
222. *C. nigricans* (Retz.) Nyl				1	1	1				
223. *C. hepatizon* (Ach.) Vain				1					?	
224. *C. glauca* (L.) Ach					1			1		
225. *C. chrysantha* Tuck	1					1				
226. *C. richardsonii* Hook										1

—	1	2	3	4	5	6	7	8	9	10
227. *Dactylina arctica* (Hook.) Nyl.	1	1	1	1	1	1	1	1	1	1
228. *D. ramulosa* (Hook.) Tuck.	1	1	1	1	1	1	....	1	1	....
229. *Cornicularia divergens* Ach.	1	1	1	1	1	1	....	1	1	1
230. *C. aculeata* (Schreb.) Ach.	1	....	....	....	1	1	1	....	....	....
231. *C. normorica* (Gunn.) DR.	....	....	....	....	....	....	....	?	....	....
232. *Alectoria chalybeiformis* (L.) Röhl.	....	....	....	1	1	....	1	....	1	....
233. *A. nitidula* (Th. Fr.) Vain.	....	....	1	1	1	....	....	....	....	....
234. *A. nigricans* (Ach.) Nyl.	1	1	1	1	1	1	....	1	1	1
235. *A. ochroleuca* (Ehrh.) Nyl.	1	1	1	1	1	1	1	1	1	1
236. *A. cincinnata* (Fr.) Lynge or var. *vexillifera* Nyl.	....	....	....	1	....	....	1	1	....	1
237. *Neuropogon sulphureus* (König) Hellb.	1	....	....	....	....	....	....	....	....	....
238. *Siphula ceratites* (Wahlenb.) Fr.	....	1	....	1	....	....	1	....	....	....
239. *Protoblastenia rupestris* (Scop.) Steiner	1	1	....	....	....	....	....	....	1	....
240. *Blastenia tetraspora* (Nyl.) Rehm.	....	....	....	....	1	....	....	....	....	....
241. *B. atrocyanescens* Th. Fr.	1	....	....	....	....	....	....	....	....	....
242. *B. melanocarpa* (Th. Fr.) Steiner.	1	....	....	....	....	....	....	....	....	....
243. *Fulgensia bracteata* (Hoffm.) Räs.	1	....	1	....	1	....	....	....	....	....
244. *Caloplaca jungermanniae* (Vahl) Th. Fr.	1	....	....	....	1	....	....	....	1	....
245. *C. subolivacea* (Th. Fr.) Lynge.	1	....	1	....	....	1	1	....	1	....
246. *C. fraudans* (Th. Fr.) Oliv.	....	....	....	....	....	....	....	1	....	....
247. *C. cinnamomea* (Th. Fr.) Oliv.	....	....	....	....	1	....	....	....	1	....
248. *C. elegans* (Link) Th. Fr.	1	1	1	1	1	1	1	1	1	1
249. *C. sorediata* (Vain.) DR.	....	....	1	....	....	....	1	....	1	1
250. *C. celata* Th. Fr.	1	....	....	....	....	....	....	....	....	....
251. *C. citrina* (Hoffm.) Th. Fr.	1	....	....	....	....	....	....	....	....	....
252. *C. pyracea* (Ach.) Th. Fr.	?	....	....	....	....	....	....	....	....	....
253. *C. stillicidiorum* (Vahl) Lynge.	1	?	....	1	....	....	....	....	....	....
254. *Xanthoria candelaria* (L.) Arn.	1	1	1	1	....	....	....	1	1	1
255. *X. parietina* (L.) Th. Fr.	?	....	....	?	....	....	....	....	....	....
256. *Buellia atrata* (Sm.) Anzi	1	....	....	1	1	....	1	1	....	1
257. *B. disciformis* (Fr.) Mudd var. *muscorum* (Hepp) Vain.	1	1	....	1	....	....	....	....	....	....
258. *B. geophila* (Sommerf.) Lynge.	....	....	....	....	1	....	....	....	....	....
259. *B. leptocline* (Flot.) Kbr.	....	1	....	....	....	....	....	....	....	....
260. *B. microplaca* (Vain.) Erichs.	....	....	1	....	....	....	....	....	....	....
261. *B. alboatra* (Hoffm.) Th. Fr.	1	....	....	....	....	....	....	....	....	....
262. *B. vilis* Th. Fr.	1	....	....	....	....	....	....	....	....	....
263. *Rinodina turfacea* (Wahlenb.) Kbr.	1	....	....	....	....	1	....	....	....	....
264. *R. roscida* (Sommerf.) Arn.	1	....	1	....	....	1	....	....	1	....
265. *R. hueana* Vain.	....	....	1	....	....	....	....	....	....	....
266. *R. confragosa* (Ach.) Kbr.	1	....	....	....	....	....	....	....	....	....
267. *R. mniaraea* (Ach.) Kbr.	1	....	....	....	....	....	....	....	1	....
268. *R. nimbosa* (Fr.) Th. Fr.	....	....	....	....	....	1	....	....	....	....
269. *Anaptychia ciliaris* (L.) Kbr. var. *crinalis* Rabenh.	....	....	....	....	....	....	....	....	1	....
270. *Physcia caesia* (Hoffm.) Hampe.	1	1	....	....	....	....	....	....	1	1
271. *P. muscigena* (Ach.) Nyl.	1	1	....	?	....	1	1	....	1	....
272. *Physcia* cf. *pulverulenta* (Schreb.) Sandst.	....	....	....	....	....	....	....	....	....	?
273. *P. dubia* (Hoffm.) Lettau emend. Lynge	1	....	....	....	....	....	....	....	1	....
274. *P. subobscura* Nyl.	1	....	....	....	....	....	....	....	....	....
275. *Thamnolia vermicularis* (Sw.) Ach.	1	1	1	1	1	1	1	1	1	1
Total: Entities	115 +21?	81 +10?	76 +2?	102 +12?	85 +3?	53 +7?	58 +2?	57 +4?	87 +11?	36 +2?
Total: Species	115 +21?	79 +10?	76 +2?	102 +12?	85 +3?	53 +7?	58 +2?	57 +4?	85 +11?	36 +2?

6. *Musci*

——	1	2	3	4	5	6	7	8	9	10
SPHAGNACEAE										
1. *Sphagnum compactum* DC							1	1		
2. *S. aongstromii* Hartm				1						
3. *S. squarrosum* Crome			1	1	1		1	1		1
4. *S. teres* (Schimp.) Ångstr		1		1			1	1		
5. *S. lindbergii* Schimp				1	1			1		
6. *S. recurvum* P. de Beauv				1						
7. *S. fimbriatum* Wils		1	1	1			1	1	1	1
8. *S. girgensohnii* Russ	1		1	1						
9. *S. robustum* (Russ.) Warnst. & Röll				1						
10. *S. fuscum* (Schimp.) H. Klinggr			1	1	1			1		
11. *S. warnstorfii* Russ			1		1					
12. *S. capillaceum* (Weiss) Schrank		1	1	1	?		1			
and var. *tenellum* (Schimp.) Andrews		*1*	*1*	*1*	1		*1*	1	1	
13. *S. plumulosun* Röll				1	1		1	1		
14. *S. quinquefarium* (Lindb.) Warnst							1			
15. *Andreaea rupestris* Hedw		1		1	1		1	1		
16. *A. papillosa* Lindb	1						1			
17. *A. blyttii* B.S.G				1						
18. *A. crassinervia* Bruch				1						
19. *A. hartmanii* Thed								1		
20. *Fissidens viridulus* (Web. & Mohr) Wahlenb	1									
21. *F. exiguus* Sull	1									
22. *F. arcticus* Bryhn	1									
23. *F. osmundioides* Hedw	1			1		1				
24. *F. adiantoides* Hedw	1									
25. *Ditrichum pusillum* (Hedw.) E. G. Britton									1	
26. *D. lineare* (Sw.) Lindb									1	
27. *D. flexicaule* (Schwaegr.) Hampe	1	1	1	1	1	1	1	1	1	1
28. *Saelania glaucescens* (Hedw.) Broth	1									
29. *Ceratodon purpureus* (Hedw.) Brid	1	1	1	1	1	1	1	1	1	
30. *Distichium hagenii* Ryan	1	1								
31. *D. capillaceum* (Hedw.) B.S.G	1	1	1	1	1	1	1		1	
32. *D. inclinatum* (Hedw.) B.S.G	1	1	1	1	1		1		1	
33. *Blindia acuta* (Hedw.) B.S.G	1			1			1		1	
34. *Seligeria polaris* Berggr	1									
35. *Dicranella cerviculata* (Hedw.) Schimp	1			1						
36. *D. heteromalla* (Hedw.) Schimp	1									
37. *Cnestrum schisti* (Wahlenb.) Hagen	1		1							
38. *Cynodontium polycarpum* (Hedw.) Schimp		1		1						
39. *C. strumiferum* (Hedw.) De Not						?				
40. *C. gracilescens* (Web. & Mohr) Schimp	1									
41. *Dichodontium pellucidum* (Hedw.) Schimp	1									
42. *Dicranoweisia crispula* (Hedw.) Lindb	1	1		1	1		1			
43. *D. cirrhata* (Hedw.) Lindb							1		1	
44. *Oncophorus virens* (Hedw.) Brid	1		1							
45. *O. wahlenbergii* Brid	1		1	1	1	1	1	1	1	1
46. *Arctoa hyperborea* (Smith) B.S.G								1	1	
47. *Kiaeria starkei* (Web. & Mohr) Hagen							1	1	?	

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48. *K. blyttii* (B.S.G.) Broth		1	1	1	1				1	
49. *K. glacialis* (Berggr.) Hagen							1			
50. *Dicranum elongatum* Schleich	1	1	1	1	1	1		1	1	1
51. *D. groenlandicum* Brid	1	1	1	1	1		1	1	1	1
52. *D. laevidens* R. S. Williams										1
53. *D. fuscescens* Turn	1	1	1	1	1	1	1	1	1	1
54. *D. brevifolium* (Lindb.) Lindb	1	1		1	1			1	1	
55. *D. spadiceum* Zett	1	1	1					1		
56. *D. bergeri* Bland	1							1	?	
57. *D. bonjeanii* De Not	1				1		1	1		
58. *D. scoparium* Hedw		1	1	1		1	1			1
59. *D. flagellare* Hedw							1			
60. *Encalypta alpina* Smith	1	1				1				
61. *E. ciliata* Hedw				?						
62. *E. vulgaris* Hedw	1		1							
63. *E. rhabdocarpa* Schwaegr	1	1		1	1		1		1	1
64. *E. affinis* Hedw. fil	1	1				1				
65. *E. streptocarpa* Hedw	1	1	1							
66. *E. procera* Bruch	1	1								
67. *Molendoa tenuinervis* Limpr	1	1								
68. *Gymnostomum rupestre* Schleich	1									
69. *Hymenostylium recurvirostrum* (Hedw.) Dixon	1	1							1	
70. *Tortella tortuosa* (Hedw.) Limpr	1	1	1	1	1	1	1		1	
71. *T. fragilis* (Drumm.) Limpr	1	1	1	1	1				1	
72. *Didymodon recurvirostris* (Hedw.) Jenn	1	1	1		1		1			
73. *D. alpigenus* (Vent.) Vent	1									
74. *D. rufus* Lorentz	1	1								
75. *Barbula rigidula* (Hedw.) Milde		1	1							
76. *Pottia heimii* (Hedw.) B.S.G. var. *obtusifolia* (R. Br.) Hagen	1	1								
77. *Stegonia latifolia* (Schwaegr.) Vent.	1			1						
and var. *pilifera* (Brid.) Broth	*1*									
78. *Desmatodon systylius* B.S.G	1			1						
79. *D. latifolius* (Hedw.) Brid							1			
and var. *muticus* (Brid.) Brid.	1	1								
80. *D. suberectus* (Hook.) Limpr	1	1								
81. *D. laureri* (Schultz) B.S.G	1									
82. *Aloina rigida* (Hedw.) Limpr	?									
83. *Tortula mucronifolia* Schwaegr	1	1								
84. *T. norvegica* (Web. fil.) Lindb	1	1					1		1	
85. *T. ruralis* (Hedw.) Smith	1	1	1	1	1	1	1		1	
86. *Grimmia commutata* Hüben	1								1	
87. *G. elongata* Kaulf	1	1		1						
88. *G. ovalis* (Hedw.) Lindb				1						
89. *G. trichophylla* Grev									?	
90. *G. pulvinata* (Hedw.) Smith				?						
91. *G. torquata* Hornsch	1									
92. *G. alpicola* Hedw		1							1	
and var. *latifolia* (Zett.) Möller				1						
93. *G. conferta* Funck	1									
94. *G. apocarpa* Hedw	1	1		1			1	1	1	
95. *G. gracilis* Schleich	1	1								
96. *G. anodon* B.S.G	1									
97. *G. plagiopodia* Hedw									1	
98. *Rhacomitrium aciculare* (Hedw.) Brid				1						
99. *R. depressum* Lesq								?		

—	1	2	3	4	5	6	7	8	9	10
100. *R. sudeticum* (Funck) B.S.G.		1					1	1	?	
101. *R. brevisetum* Lindb.	?									
102. *R. fasciculare* (Hedw.) Brid.									?	
103. *R. heterostichum* (Hedw.) Brid.			1				1			
104. *R. microcarpum* (Hedw.) Brid.						1				
105. *R. lanuginosum* (Hedw.) Brid.	1	1	1	1	1	1	1	1	1	1
106. *R. canescens* (Hedw.) Brid.	1	1		1	1		1	1	1	
107. *Funaria muehlenbergii* Turn.			?							
108. *F. polaris* Bryhn	1									
109. *F. hygrometrica* Hedw. var. *arctica* Berggr.	1		1							
110. *Voita hyperborea* Grev. & Arn.	1			1		1			1	
111. *Tayloria acuminata* (Schleich.) Hornsch.	1			1						
112. *Tetraplodon mnioides* (Hedw.) B.S.G.	1	1	1	1	1	1	1	1	1	
and var. *paradoxus* (R. Br.) Steere	*1*									
and var. *urceolatus* (Brid.) Steere	*1*		*1*	*1*	*1*	*1*	*1*	*1*		
113. *Haplodon wormskjoldii* (Hornem.) R. Br.	1	1	1	1	1	1	1	1	1	
114. *Splachnum vasculosum* Hedw.	1	1				1			1	1
115. *Mielichhoferia macrocarpa* (Drumm.) Br. & S.	1	1								
116. *Pohlia crudoides* (Sull. & Lesq.) Broth.								1		
117. *P. longicolla* (Hedw.) Lindb.	?									
118. *P. cruda* (Hedw.) Lindb.	1	1	1	1	1	1	1		1	1
119. *P. acuminata* Hoppe & Hornsch.				1						
120. *P. nutans* (Hedw.) Lindb.	1	1	1	1	1	1	1	1	1	
121. *P. schimperi* (C. Müll.) Andrews.				1						
122. *P. cucullata* (Schwaegr.) Bruch.				1						
123. *P. ludwigii* (Spreng.) Broth.		1		1			1			
124. *P. drummondii* (C. Müll.) Andrews	1			1						1
125. *P. gracilis* (Schleich.) Lindb.				?						
126. *Mniobryum albicans* (Wahlenb.) Limpr.							1		1	
127. *Anomobryum concinnatum* (Spruce) Lindb.	1									
128. *Plagiobryum demissum* (Hoppe & Hornsch.) Lindb.	1			1			1			
129. *Leptobryum pyriforme* (Hedw.) Schimp.	1	1		1	1		1			1
130. *Bryum brownii* B.S.G.	1								?	
131. *B. fridtzii* Hagen	1									
132. *B. pendulum* (Hornsch.) Schimp.	1	1	1		1			1	1	
133. *B. arcticum* (R. Br.) B.S.G.	1	1		1	1			1		1
134. *B. tomentosum* Limpr.	1									
135. *B. arcuatum* Limpr.	1	1								
136. *B. pearyanum* Bryhn	1									
137. *B. micans* Limpr.	1									
138. *B. cernuum* (Sw.) Lindb.		1								
139. *B. opdalense* Limpr.	1									
140. *B. rutilans* Brid.	?	?								
141. *B. pallens* Brid.	1	1								
142. *B. turbinatum* (Hedw.) Schwaegr.				1		1			1	
143. *B. obtusifolium* Lindb.	1	1	1		1				1	
144. *B. cyclophyllum* (Schwaegr.) B.S.G.	1									
145. *B. purpurascens* (R. Br.) B.S.G.		1		1						
146. *B. autumnale* Limpr.	1									
147. *B. calophyllum* R. Br.	1	1		1		1				

—	1	2	3	4	5	6	7	8	9	10
148. *B. lacustre* Bland	1		1							
149. *B. aggattuense* Philib	1									
150. *B. globosum* Lindb	1								1	
151. *B. limprichtii* Kaurin	1									
152. *B. languidum* Hagen	1									
153. *B. inclinatum* (Sw.) B.S.G	1		1	1	1		1		1	
154. *B. curvatum* Arn. & Kaurin	1									
155. *B. crispulum* Hampe	1	1				1				
156. *B. pseudotriquetrum* (Hedw.) Schwaegr	1	1	1			1			1	
157. *B. subtumidum* Limpr	1									
158. *B. retusum* Hagen	1									
159. *B. stenodon* Hagen	1									
160. *B. graefianum* Schlieph	1				1					
161. *B. bimum* (Brid.) Turn		?		?						
162. *B. nitidulum* Lindb	1	1							1	
163. *B. microstegium* B.S.G									1	
164. *B. intermedium* (Brid.) Brid									?	
165. *B. cirratum* Hoppe & Hornsch	1									
166. *B. affine* (Bruch) Lindb	1									
167. *B. teres* Lindb	1	1								
168. *B. pallescens* Schleich	1			1	1					
169. *B. argenteum* Hedw	1	1		1			1			
170. *B. stirtoni* Schimp	1	1								
171. *B. elegans* Nees	1	1								
172. *Mnium blyttii* B.S.G	1									
173. *M. orthorrhynchium* Brid	1	1			1	1				
174. *M. marginatum* (Dicks.) P. de Beauv				?			1			
175. *M. undulatum* Hedw				?						
176. *M. curvatulum* (Lindb.) Limpr	1	1								
177. *M. affine* Bland	1	1	1		1	1	1	1	1	
178. *M. hymenophyllum* B.S.G	1					1			1	
179. *M. hymenophylloides* Hüben	1	1	1	1			1			
180. *M. pseudopunctatum* Bruch & Schimp	1	1								
181. *M. punctatum* Hedw	1								1	
182. *Cinclidium stygium* Sw	1		1			1				
183. *C. subrotundum* Lindb	1	1	1	1			1	1		1
184. *C. latifolium* Lindb						1				
185. *C. arcticum* (B.S.G.) C. Müller	1		1		1				1	
186. *C. polare* (Kindb.) Bryhn	1	1								
187. *Aulacomnium acuminatum* (Lindb. & Arn.) Paris	1	1			1					
188. *A. turgidum* (Wahlenb.) Schwaegr.	1	1	1	1	1	1	1	1	1	1
189. *A. palustre* (Hedw.) Schwaegr	1	1	1	1	1	1	1	1	1	1
190. *Paludella squarrosa* (Hedw.) Brid.			1	1			1	1		
191. *Meesea uliginosa* Hedw	1		1	1	1	1	1	1	1	1
192. *M. triquetra* (Hook. & Tayl.) Ångstr	1	1	1	1		1	1	1	1	1
193. *Catoscopium nigritum* (Hedw.) Brid	1	1	1		1					
194. *Plagiopus oederi* (Gunn.) Limpr.	1	1			1				1	
195. *Bartramia pomiformis* Hedw				?						
196. *B. ithyphylla* Brid	1			1	1		1	1		
197. *Conostomum boreale* Sw	1	1		1	1		1	1		
198. *Philonotis fontana* (Hedw.) Brid.	1	1	1				1	1	1	
199. *P. tomentella* Mol	1	1	1	1	1	1	1			1
200. *P. caespitosa* Wils	1									
201. *Timmia norvegica* Zett	1					1				
202. *T. austriaca* Hedw	1	1	1		1	1		1	1	

——	1	2	3	4	5	6	7	8	9	10
203. *T. bavarica* Hessl	1	1							1	
204. *T. megapolitana* Hedw		1								
205. *Orthotrichum anomalum* Hedw									1	
206. *O. microblepharum* B.S.G		1		1	1					
207. *O. speciosum* Nees	1			1		?			1	
208. *O. killiasii* C. Müll	1	1	1			1				
209. *O. laevigatum* Zett									1	
210. *O. alpestre* Hornsch	1									
211. *Ulota curvifolia* (Wahlenb.) Brid				?						
212. *Amphidium lapponicum* (Hedw.) Schimp	1			1	1					
213. *Climacium americanum* Brid									1	
214. *Hedwigia ciliata* (Hedw.) B.S.G									1	
215. *Myurella apiculata* B.S.G	1	1	1		1	1				
216. *M. julacea* (Vill.) B.S.G	1	1	1	1	1	1			1	
217. *Leskea nervosa* (Schwaegr.) Myrin	1									
218. *Pseudoleskea denudata* Kindb. var. *holzingeri* Best							1			
219. *Abietinella abietina* (Brid.) C. Müll	1	1			1	1			1	
220. *Cratoneuron filicinum* (Hedw.) Roth	1	1								
221. *Campylium hispidulum* Mitten var. *sommerfeltii* (Myr.) Lindb.		1								
222. *C. polygamum* (B.S.G.) Bryhn	1	1	1				1		1	
223. *C. protensum* (Brid.) Kindb	1									1
224. *C. stellatum* (Hedw.) Lange & C. Jens	1	1	1		1	1	1	1	1	1
225. *Amblystegium serpens* (Hedw.) B.S.G									1	
226. *Amblystegiella sprucei* (Bruch) Loeske	1	1	1							
227. *Drepanocladus uncinatus* (Hedw.) Warnst	1	1	1	1	1	1	1	1	1	1
228. *D. revolvens* (Sw.) Warnst	1	1	1	1	1	1	1	1	1	1
229. *D. intermedius* (Lindb.) Warnst	1	1	1	1	1		1		1	
230. *D. exannulatus* (B.S.G.) Warnst	1			1	1		1	1		
and f. *tundrae* (Arn.) Mönk.	*1*	1								
and var. *brachydictyus* (Ren.) Grout									1	
231. *D. fluitans* (Hedw.) Warnst	1	1		1	1		1	1	1	
232. *D. berggrenii* (C. Jens.) Broth	1									
233. *D. badius* (Hartm.) Roth	1			1	1				1	1
234. *D. aduncus* (Hedw.) Warnst		1		1		1	1	1	1	1
and var. *polycarpus* (Bland.) Warnst	1	*1*		*1*				*1*		*1*
and var. *kneiffii* (Schimp.) Warnst				*1*			*1*			
235. *D. sendtneri* (Schimp.) Warnst			1		1			1	1	
236. *D. brevifolius* (Lindb.) Warnst	1	1	1						1	
237. *D. latifolius* (Lindb. & Arn.) Warnst	1	1								
238. *D. latinerve* Warnst	1									
239. *D. lycopodioides* (Brid.) Warnst	1								1	
240. *Hygrohypnum ochraceum* (Turn.) Loeske		1								
241. *H. palustre* (Hedw.) Loeske	1									
242. *H. polare* (Lindb.) Broth	1									
243. *Calliergon trifarium* (Web. & Mohr) Kindb	1	1			1	1		1		
244. *C. turgescens* (Th. Jens.) Kindb	1	1	1	1	1	1			1	

——	1	2	3	4	5	6	7	8	9	10
245. *C. richardsonii* (Mitt.) Kindb.							1	1		1
246. *C. giganteum* (Schimp.) Kindb.	1	1	1		1	1	1			1
and var. *fluitans* (Klinggr.) Roth				1						
and var. *cyclophyllotum* (Holz.) Grout			*1*							
247. *C. cordifolium* (Hedw.) Kindb.				1	1	1	1	1	?	
248. *C. orbicularicordatum* (Ren. & Card.) Broth.					1			1		1
249. *C. sarmentosum* (Wahlenb.) Kindb.	1	1	1	1	1		1	1		1
250. *C. stramineum* (Brid.) Kindb.	1			1	1		1	1	1	1
251. *Calliergidium pseudostramineum* (C. Müll.) Grout			1	1						
252. *Calliergonella cuspidata* (Brid.) Loeske									1	
253. *Scorpidium scorpioides* (Hedw.) Limpr.	1		1		1		1		1	
254. *Camptothecium lutescens* (Hedw.) B.S.G.			1		1				1	
255. *Tomenthypnum nitens* (Schreb.) Loeske	1	1	1	1	1	1	1	1	1	
256. *Brachythecium salebrosum* (Hoffm.) B.S.G.	?	?	?	1					1	
257. *B. albicans* (Hedw.) B.S.G.		1	1	1	1	1	1	1	1	
258. *B. acutum* (Mitt.) Sull.									?	
259. *B. rivulare* B.S.G.							1			
260. *B. plumosum* (Sw.) B.S.G.			1			1			1	1
261. *Cirriphyllum cirrosum* (Schwaegr.) Grout	1	1	1			1			1	
262. *Eurhynchium pulchellum* (Hedw.) Jennings	1	1							1	
263. *E. diversifolium* (Schleich.) B.S.G.	1		1			1				
264. *Pterigynandrum filiforme* Hedw.	1				1	1	1			
265. *Orthothecium intricatum* (Hartm.) B.S.G.	1	1			1					
266. *O. strictum* Lorentz	1	1		1						
267. *O. chryseum* (Schwaegr.) B.S.G.	1	1	1	1	1			1	1	
268. *O. rufescens* (Dicks.) B.S.G.	1		1	1						
269. *O. acuminatum* Bryhn	1									
270. *Entodon* sp.									1	
271. *Pleurozium schreberi* (Willd.) Mitten						1		1	1	
272. *Plagiothecium denticulatum* (Hedw.) B.S.G.						1				
273. *Pylaisia suttoni* Jennings									1	
274. *Hypnum fastigiatum* Brid.	1									
275. *H. reptile* Michx.		1		1						
276. *H. bambergeri* Schimp.		1	1		1					
277. *H. vaucheri* Lesq.	1	1	1							
278. *H. cupressiforme* Hedw.		1							1	
279. *H. hamulosum* B.S.G.	1	1		1					1	
280. *H. callichroum* Brid.				1					1	
281. *H. revolutum* (Mitt.) Lindb.	1	1	1							
282. *H. dieckii* Ren. & Card.			1							
283. *Breidleria arcuata* (Hedw.) Loeske		1	1							
284. *B. pratensis* (Koch) Loeske		1								
285. *Isopterygium pulchellum* (Dicks.) Broth.	1	1		1	1	1				
286. *I. striatellum* (Brid.) Loeske					1					

—	1	2	3	4	5	6	7	8	9	10
287. *Ctenidium procerrimum* (Mol.) Broth	1	1	....	....	....	....	....	....	....	....
288. *Rhytidium rugosum* (Hedw.) Kindb	....	1	1	1	....	....	....	....	1	....
289. *Hylocomium splendens* (Hedw.) B.S.G	1	1	1	1	1	....	1	1	1	....
290. *Oligotrichum hercynicum* (Hedw.) Lam. & DC	....	....	....	?	....	....	....	....	....	....
291. *Psilopilum laevigatum* (Wahlenb.) Lindb	1	....	1	1	....	....	....	....	....	....
292. *Phylocrya aspera* Hag. & Jens	....	....	....	1	....	....	....	....	....	....
293. *Pogonatum capillare* (Richard) Brid	1	....	....	1	....	....	....	....	....	....
294. *P. urnigerum* (Hedw.) P. de Beauv	1	1	1	....	....	....	....	1	1	....
295. *Polytrichum alpinum* Hedw	1	1	1	1	1	1	1	1	1	....
and var. *septentrionale* Röhl.	....	....	....	*1*	*1*	....	....	....	*1*	....
and var. *brevifolium* C. Müll.	*1*	....	....	....	*1*	....	*1*	....	*1*	....
and var. *arcticum* Wahlenb.	*1*	....	....	....	....	....	....	....	....	....
296. *P. fragile* Bryhn	1	....	....	....	....	....	....	....	....	....
297. *P. yukonense* Card. & Thér	....	....	....	....	....	....	1	1	....	....
298. *P. jensenii* Hagen	....	....	....	1	1	....	....	1	....	....
299. *P. commune* Hedw	....	....	....	....	....	....	....	1	....	....
300. *P. norvegicum* Hedw	....	....	....	1	....	1	1	1	....	....
301. *P. hyperboreum* R. Br	1	1	1	1	1	....	1	1	1	....
302. *P. piliferum* Hedw	1	1	1	1	1	....	1	....	....	....
303. *P. juniperinum* Hedw	1	1	1	1	1	1	....	1	?	1
304. *P. strictum* Turn	1	1	1	1	1	1	1	1	....	1
Total — Entities	203 +5?	135 +3?	93 +2?	117 +9?	90 +1?	62 +2?	88	72 +1?	101 +10?	37 ....
Total — Species	196 +5?	133 +3?	90 +2?	112 +9?	87 +1?	61 +2?	84	70 +1?	99 +10?	36 ....

7. *Hepaticae*

—	1	2	3	4	5	6	7	8	9
1. *Alicularia scalaris* (Schrad.) Corda	....	....	....	....	....	?	....	....	....
2. *Aneura pinguis* (L.) Dum	1	1	....	....	....	?	....	....	?
3. *Anthelia julacea* (L.) Dum	1	....	....	1	....	....	....	....	....
4. *A. juratzkana* (Limpr.) Trevis	1	....	....	....	....	....	....	....	....
5. *Aplozia atrovirens* (Schleich.) Dum.	1	....	....	....	....	....	....	....	....
and var. *gracilis* Bryhn & Kaalaas	*1*	....	....	....	....	....	....	....	....
6. *A. polaris* (Lindb.) Bryhn	1	....	....	....	....	....	....	....	....
7. *A. pumila* (With.) Dum	1	....	....	....	....	....	....	1	....
8. *A. sphaerocarpa* (Hook.) Dum	....	....	1	....	....	1	....	....	....
and var. *nana* (Nees) K. Müller	1	....	....	....	....	....	....	....	....
9. *Arnellia fennica* (Gott.) Lindberg	1	1	....	....	....	....	....	....	....
10. *Blepharostoma trichophyllum* (L.) Dum	1	....	1	....	....	1	....	....	1
and var. *brevirete* Bryhn & Kaalaas	*1*	....	....	....	....	....	....	....	....
11. *Cephalozia ambigua* Massalongo	1	....	....	....	....	....	....	....	1
12. *C. bicuspidata* (L.) Dum	1	....	1	1	....	....	....	....	....

—	1	2	3	4	5	6	7	8	9
13. *C. fluitans* (Nees) Spruce				1				1	
14. *C. media* Lindberg	1								
15. *C. pleniceps* (Aust.) Lindberg	1		1						
16. *Cephaloziella biloba* (Lindb.) K. Müller	1								
17. *C. bryhnii* (Kaalaas) Schiffn	1								
18. *C. grimsulana* (Jack) K. Müller	1								
19. *C. hampeana* (Nees) Schiffn			?			?			?
and var. *subtilis* (Velenovsky) MacVicar									1
20. *C. starkii* (Funck) Schiffn		1		1		1		1	
21. *C. verrucosa* s.l. (Jens.) Bryhn & Kaalaas	1								
22. *Chandonanthus setiformis* (Ehrh.) Lindberg	1	1	1	1	1	?	1	1	
and var. *alpinus* (Hook.) Kaalaas				*1*					
23. *Clevea hyalina* (Sommerf.) Lindberg	1								
24. *Diplophyllum gymnostomophilum* (Kaalaas) Kaalaas	1								
25. *D. incurvum* Bryhn & Kaalaas	1	1							
26. *Fimbriaria* sp									1
27. *Frullania tamarisci* (L.) Dum			1						
28. *Gymnomitrium concinnatum* (Lightf.) Corda		1		1				1	
29. *G. corallioides* Nees	1		1	1	1		1	1	
30. *G. crenulatum* Gottsche			1						
31. *Lepidozia setacea* (Web.) Mitten var. *sphagnicola* (Evans) Hesselbo			1						
32. *Lophozia alpestris* (Schleich.) Evans	1	1	1						
33. *L. atlantica* (Kaal.) "Schiffn."			1	1	1			1	
34. *L. attenuata* (Mart.) Dum				1	1				1
35. *L. badensis* (Gott.) Schiffn	1								
36. *L. barbata* (Schmid.) Dum		1	1	1		?			?
37. *L. binsteadii* (Kaal.) Evans	1								
38. *L. excisa* (Dicks.) Dum	1								
39. *L. floerkei* (Weber & Mohr) Schiffn	1								
40. *L. harpanthoides* Bryhn & Kaalaas	1	1	1						
41. *L. hatcheri* (Evans) Stephani	1								
42. *L. heterocolpos* (Thed.) Howe	1								
43. *L. kunzeana* (Hüb.) Evans			1						
44. *L. lycopodioides* (Wallr.) Cogn								1	
45. *L. marchica* (Nees) Stephani	1								
46. *L. muelleri* (Nees) Dum	1		1						
and var. *bantryensis* (Hook.) Kaalaas	*1*								
47. *L. obtusa* (Lindb.) Evans	1								1
48. *L. porphyroleuca* (Nees) Schiffn	1								
49. *L. quadriloba* (Lindb.) Evans	1		1						
and var. *heterophylla* Bryhn & Kaalaas	*1*	1							
50. *L. quinquedentata* (Huds.) Cogn	1		1	1		1			
51. *L. ventricosa* (Dicks.) Dum	1			1		1			
52. *L. violascens* Bryhn & Kaalaas	1								
53. *L. wenzelii* (Nees) Stephani	1								1
54. *Mannia pilosa* (Hornem.) Frye & Clark	1								
55. *Marchantia polymorpha* L	1	1		1	1	1	1	1	1
56. *Marsupella groenlandica* C. Jensen	1				1			1	
57. *Mesoptychia sahlbergii* (Lindb. & Arnell) Evans	1								
58. *Odontoschisma macounii* (Aust.) Underw.	1						1		
59. *Plagiochila arctica* Bryhn & Kaalaas	1	1							
60. *P. asplenioides* (L.) Dum			1			1			
61. *Pleuroclada albescens* (Hook.) Spruce var. *islandica* (Nees) Spruce				1					

——	1	2	3	4	5	6	7	8	9
62. *Pleuroschisma tricrenatum* (Wahlenb.) Dum	1								
63. *Preissia quadrata* (Scop.) Nees	1	1							1
64. *Ptilidium ciliare* (L.) Hampe	1	1	1	1	1	1	1	1	1
65. *Sauteria alpina* Nees									1
66. *Scapania aequiloba* (Schwaegr.) Dum	1								
67. *S. aspera* M. & H. Bernet				1					
68. *S. compacta* (Roth) Dum									1
69. *S. curta* (Mart.) Dum				1					
and var. *rosacea* (Corda) Carrington	1								
70. *S. cuspiduligera* (Nees) K. Müller	1								
71. *S. irrigua* (Nees) Dum				1					
and var. *remota* (Kaal.) K. Müller	1								
72. *S. mucronata* Buch						1			
73. *S. nemorosa* Dum				1				1	
74. *S. simmonsii* Bryhn & Kaalaas	1								
75. *S. undulata* (L.) Dum	1				1			1	
76. *Sphenolobus groenlandicus* (Nees) Stephani	1								
77. *S. minutus* (Crantz) Stephani	1	1	1	1		1			1
78. *S. politus* (Nees) Stephani	1								
Total: Entities	61	15	20 +1?	21	8	10 +5?	5	13	13 +3?
Total: Species	57	15	20 +1?	20	8	10 +5?	5	13	13 +3?

Species Totals

Excluding queried reports and subsequent additions mentioned in recent papers—*See* Foreword, pp. iii-iv.

——	1	2	3	4	5	6	7	8	9	10
Algae	6	46	106	88	170	.....	62	126	8	106
Marine Phytoplankton	65	68	66	82	36	.....	.....	.....	42	.....
Freshwater Diatomeae	76	45	83	71	94	.....	58	54	33	.....
Fungi	1	6	20	7	27	.....	12	33	5	13
Lichenes	115	79	76	102	85	53	58	57	85	36
Musci	196	133	90	112	87	61	84	70	99	36
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[1] Excluding most orthographic errors. The generic, specific, and intra-specific entities in *italics* are upheld as occurring in the Canadian Eastern Arctic and include recent additions not treated in the general text (*See* Foreword, pp. iii-iv).

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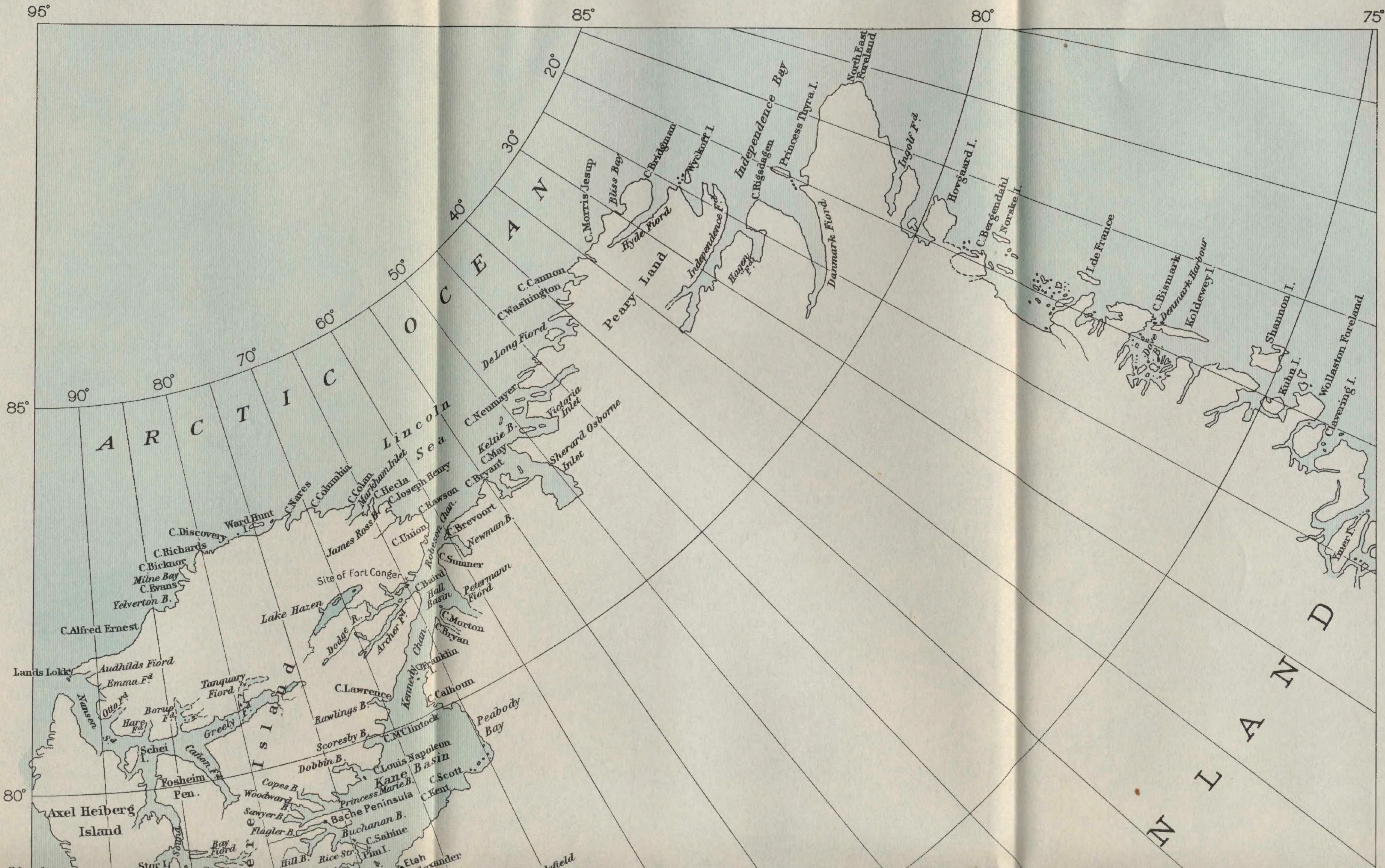
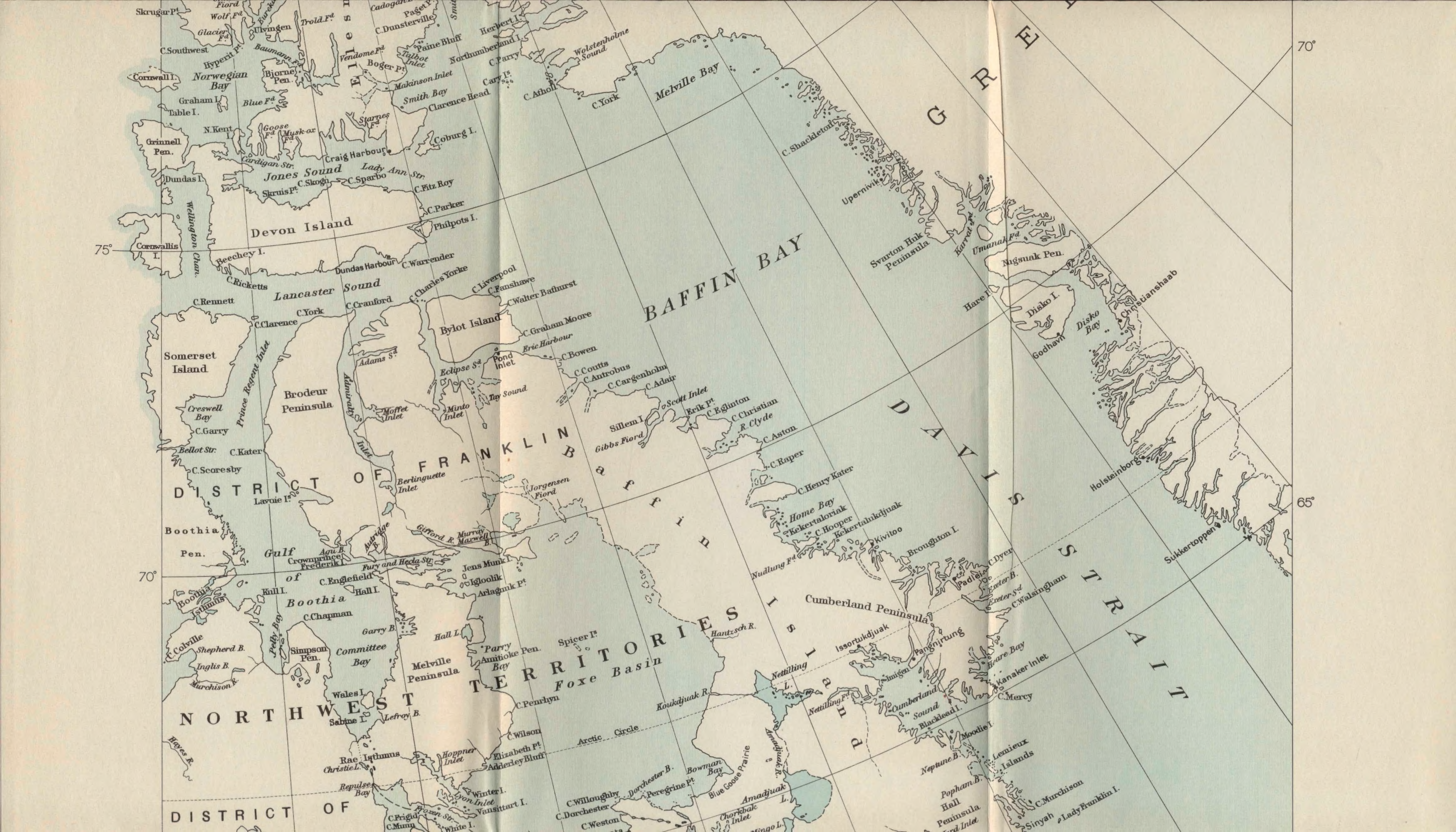
CANADA

DEPARTMENT OF MINES AND RESOURCES

NATIONAL MUSEUM OF CANADA

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Fiord
Wolf Fd.
Eureka
Cadogan
Paget Pt.
Glacier Fd.
Ulvingen
Trold F.d.
C. Dunsterville
C. Southwest
Hyperit Pt.
Baumann Fd.
Vendome Fd.
Paine Bluff
Herbert I.
Talbot Inlet
Northumberland I.
Wolstenholme Sound
Cornwall I.
Norwegian Bay
Bjorne Pen.
Boger Pt.
C. Parry
Makinson Inlet
Carey Is.
Ellesmere
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Clarence Head
C. York
Melville Bay
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Musk-ox Fd.
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Grinnell Pen.
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Cardigan Str.
C. Shackleton
Jones Sound
Lady Ann Str.
Dundas I.
C. Skogn
C. Sparbo
Skruis Pt.
C. Fitz Roy
Upernivik
Wellington Chan.
C. Parker
Philpots I.
Devon Island
Svarton Huk Peninsula
Karrat Fd.
Umanak Fd.
75°
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Beechey I.
Dundas Harbour
C. Warrender
Nugsuak Pen.
C. Ricketts
Lancaster Sound
C. Charles Yorke
C. Liverpool
C. Fanshawe
BAFFIN BAY
C. Rennett
C. Walter Bathurst
Hare I.
Disko I.
Christianshaab
C. Cranford
C. York
C. Clarence
Bylot Island
C. Graham Moore
Disko Bay
Godhavn
Somerset Island
Prince Regent Inlet
Eric Harbour
Adams Sd.
Pond Inlet
C. Bowen
Eclipse Sd.
C. Coutts
C. Antrobus
C. Cargenholm
C. Adair
Brodeur Peninsula
Admiralty Inlet
Tay Sound
Creswell Bay
Moffet Inlet
Minto Inlet
Scott Inlet
Erik Pt.
C. Eglinton
C. Christian
R. Clyde
C. Garry
DAVIS STRAIT
Sillem I.
Gibbs Fiord
C. Aston
Bellot Str.
C. Kater
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C. Scoresby
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70°
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C. Chapman
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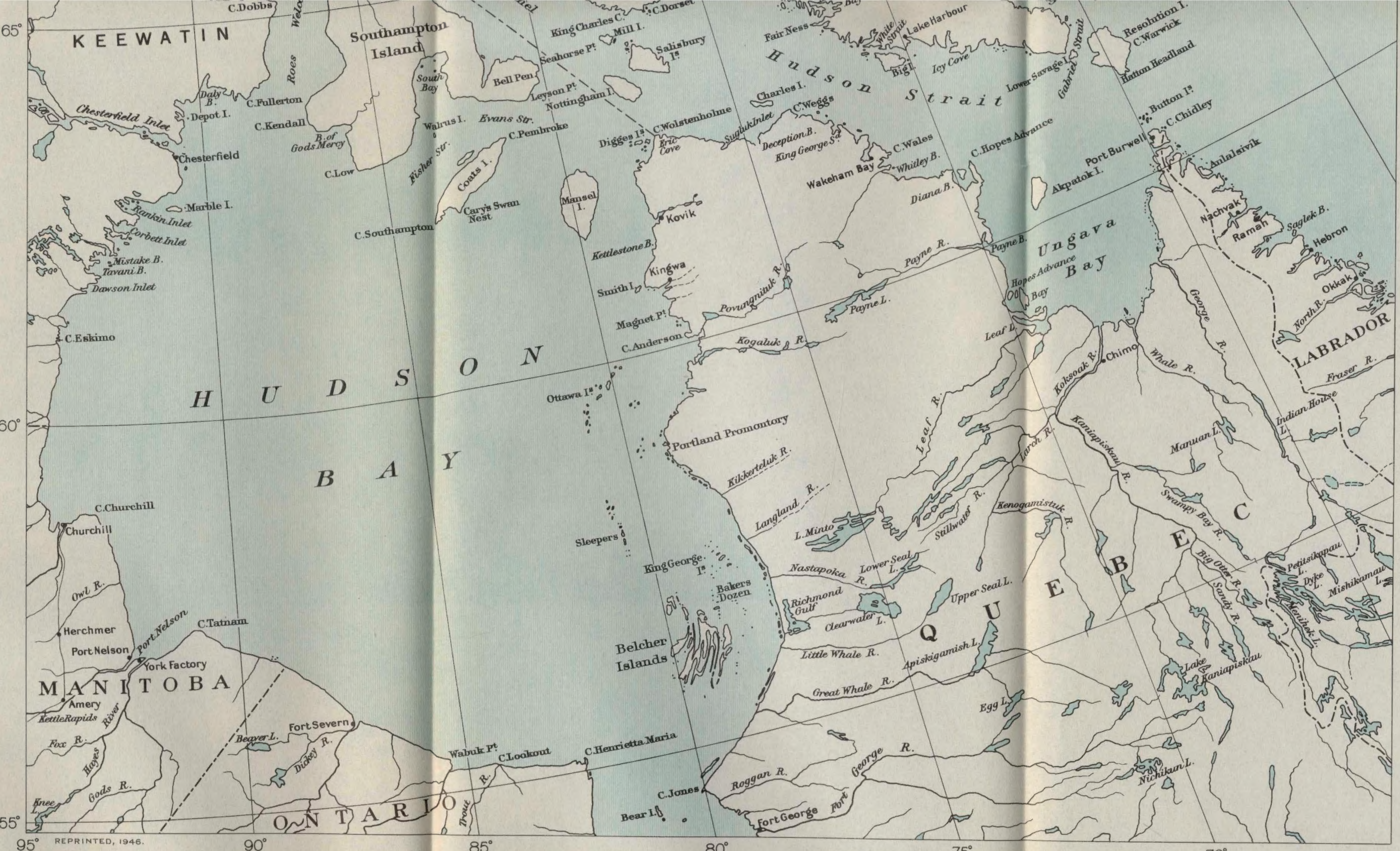
Chorkbak Inlet
Ford Inlet
Lady Franklin I.
DISTRICT OF
C. Frigid
C. Munn
White I.
C. Weston
Mingo L.
Sinyah



MAP 558A

CANADIAN EASTERN ARCTIC

Scale, $\frac{1}{6,336,000}$ or 1 Inch to 100 Miles

Miles

100 0 100 200 300